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SERIES 18 No. 1

AUGUST, 1914

# BULLETIN

OF THE

## Lowell - Textile School

Lowell, Massachusetts, U. S. A.



ISSUED QUARTERLY

6155

Entered Aug. 26, 1902, at Lowell, Massachusetts  
as second-class matter under Act of  
Congress, July 16, 1894

Moody Street and Colonial Avenue

FOR CATALOG AND TERMS ADDRESS CHARLES H. EAMES, PRINCIPAL

# A Foreword

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To the young man about to enter some technical school or college the future, as viewed from present day conditions, has opportunities which have perhaps never been offered before.

The status of industrial or commercial conditions varies from year to year, or period to period, according to a certain cycle of events from business depression to business elevation. At the present time we recognize a period of depression which was anticipated several months ago. In addition to this economic condition, we have a great political disturbance in foreign countries, which while foreseen as a possibility in the near future, was not expected this year. Indeed by many it has been looked upon as a phantom that would vanish with time.

The effect of a war between nations of the standing and power in the world that are at present fighting each other is shown upon all other countries even to our own greater self-contained nation. Although this country is rich in natural resources, wealth and intellect of its people, still when our neighbors are at war and commerce is seriously affected, we realize that we are not entirely self-contained or self-supporting, but are in turn dependent upon other countries for supplies, that in their absence are considered as necessities. In many cases they are of the manufactured class and can be made in this country. When this is realized the cry goes up over the land—"Why not manufacture these articles and not import them, thus breaking the dependency upon some other country?"

Because the textile and some other large and important industries of this country have been dependent upon Germany for its dyestuffs and have found the supply suddenly stopped, the possibility of manufacturing these to advantage in this country is being seriously considered, and the probability that a new industry will grow here is very certain.

Another problem has come to the attention of the American manufacturers as a result of cessation of commerce with many foreign nations. The markets in South America and in other

parts of the world offer at this time, as well as for future time, places of consumption for American products. This means a stimulus to American industries. Consideration of the future in this light gives ground for optimism from the standpoint of business depression.

We must realize, of course, that stable changes from periods of low business activity to those of high activity cannot come immediately. Forces producing these changes work rather slowly. We ought to prepare for these improved conditions and be ready to meet them. This is particularly true of one of the greatest of our American industries, the textile. While it is now feeling the result of general business conditions, it will in a very short time feel the demand for greater volume and variety of product.

The expansion which is bound to come will bring the demand for skilled men. Positions, that demand men of intelligence will be seeking such men. It is but a logical deduction that those who start to prepare now will be ready when the demand comes.

It seems that the present is the psychological moment for a young man to prepare himself by proper courses that he may accept the opportunities that will be his in the textile industry in three, four or more years.

The Lowell Textile School offers courses which will prepare young men for positions in the manufacturing, commercial and engineering departments of the textile industry. By its course in Chemistry and Dyeing it prepares young men for positions in manufacturing and application of dyes and chemicals. For a number of years the course of instruction in this department has included the manufacture of dyestuffs that have been used at the school in dyeing textile material. The scope of this work will be much extended during the present and succeeding years; thus offering to young men an exceptional opportunity to prepare for a later demand.

Serious consideration should be given at this time by young men to the opportunities that are offered in the great textile field. These opportunities should appeal to those who have inclinations for work in the manufacturing, commercial, engineering, or applied chemical fields.

Applications for students in the regular classes received until November 1. Special students admitted at any time.





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## Opportunities for the Graduate of the Lowell Textile School

Inquiries are frequently made by prospective students, their parents or friends, as to the possible positions open to the graduate from the Lowell Textile School. These inquiries are made for the purpose of learning, not only about the opportunities offered immediately after graduation, but also concerning the extent to which these opportunities present a satisfactory and profitable livelihood. To one who is acquainted with the duties, business, social and educational demands, as well as the pecuniary returns attached to the many positions in the textile industry, the best answer to such inquiries can be found in a careful study of the graduate list as given each year in the back of the school catalogue. To those who are not familiar with the industry in its many departments the citation of a few representative cases with explanation of other possibilities may give some light to those who are considering this industry as a lucrative field of endeavor.

The aim of the school as set forth in the articles of incorporation was made purposely a broad one in order to meet the demands of a wide and ever increasing industry. Every department of the industrial, commercial or scientific world that enters into or is requisite to the production and marketing of textile material in any form is considered a part of the industry, and the preparation for positions resulting under this classification is considered as being within the scope of the curriculum of this school.

Several years ago a young man upon graduating made application to one of the largest textile mills in this state for employment. He was hired and assigned to the department handling the raw material. His work was the same as that of the other employees of that room, but his ability and industry soon brought his worth to the attention of his superiors. He was given over-sight of others and following evidence of executive ability he was promoted to other departments and better positions. Another large mill learned of his work and offered him the position of assistant to the superintendent that he might take over many of the duties of the superintendent. The requirements of his work have been ever increasing and varied and the compensation has kept pace with the greater responsibilities.

A second case is one of a young man who was hired upon graduation as assistant to the treasurer of a certain mill with the understanding that he would succeed the treasurer if his work was satisfactory. In three years from graduation this plan was fulfilled.

A third graduate found his first employment as a wool salesman in a commission house and his success here brought a greater opportunity in a selling house handling the products of several woolen and worsted mills.

The courses of elementary science as given in the preparatory schools have developed in some young men an interest in the practical application of those scientific laws which were first met in the studies of Chemistry and Physics. These young men have upon graduating from the course in Chemistry and Dyeing found not only employment as chemists and color experts with some of the dyestuff concerns and mills, but chances to advance through the solution of problems which stimulate their fondness for experimentation and research. Many have replaced in the American agencies of German dyestuff concerns men, who in early days of imported dyes, were necessary in the accurate application of these colors. There have been several cases where the young graduate has been given special training at the German works in order that greater familiarity might be had with the concern's patented dyes.

Those who enter the textile mills first find employment as assistants to the dyer or chemist and later rise to positions of second-hand, overseers and superintendents. With the probability that more of the American chemical works will manufacture dyestuffs to meet the demand arising from shortage from importation, there is great probability that a new field of applied chemistry will be open to graduates of this textile school.

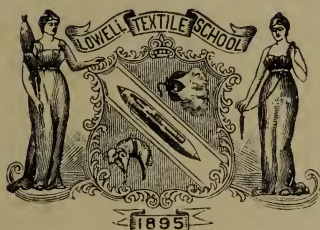
As manufacturers have come to realize more keenly the necessity of economy in the production of power and appreciate the possible saving in power, or the increased production with the same expenditure of energy, there has arisen the need of men who are acquainted with both the manufacturing problem and the facilities available for power generation and distribution. The Textile Engineer has come to be recognized and will, as time goes on, be in as great a demand as is the Textile Chemist. Some of the graduates have become associated with consulting and constructing engineers engaged in Textile Engineering. Others are in the employ of Industrial or Efficiency Engineers or are directly employed by the mill to pursue work of the same character. Positions of this sort call for one who has special training, who has been taught to analyze problems of all kinds, who has been taught principles and caused to make his own application, who is a student of human nature and has the faculty to guide, teach and direct others that there may be a minimum waste. To those prepared by training and experience in this line of work, there is a wide field of activity with almost any managerial position a possibility.

Besides the regular and accepted positions recognized as existing in the industry, graduates of the school are found in the United States Bureau of Standards, in the Customs Service, in the employ of Rubber concerns manufacturing automobile tires, and other articles in which textile materials enter, teachers in industrial and textile schools, as well as in other lines of work that are more or less connected with textile material.

In the list of graduates will be found names of young men who, because of some natural artistic ability which has been given direction through training at the school, are now employed as designers of textile fabrics. In this branch the possibilities are many and the application of art and decorative design finds practical application. To some young men with these gifts and training the commercial field appeals and for them are open lucrative positions as styler or salesmen. Nearly every cloth mill must employ a designer whose ability is an important factor in the success of the mill. A good designer is always in demand.

Each year the variety of positions opening to the graduates seems to be greater, for new and unknown channels come to the attention of the school authorities. The successes of the graduates in the varied lines demonstrates very forcibly the extreme breadth and thoroughness of the instruction given, otherwise the successes in the varied lines could hardly be expected.

ANNUAL REPORT  
OF THE  
TRUSTEES  
OF THE  
LOWELL TEXTILE SCHOOL  
OF  
LOWELL, MASSACHUSETTS, U. S. A.  
FOR THE YEAR ENDED  
JUNE 30, 1914



BUTTERFIELD PRINTING COMPANY  
LOWELL, MASS.  
1915





# ANNUAL REPORT OF THE TRUSTEES OF THE LOWELL TEXTILE SCHOOL FOR THE YEAR ENDED JUNE 30, 1914.

*To the Honorable Senate and House of Representatives of the  
Commonwealth of Massachusetts in General Court assembled.*

The trustees of the Lowell Textile School of Lowell, Mass., respectively submit the following report for the year ending June 30, 1914, in compliance with chapter 248, Acts of 1904, which provides:—

“SECTION 1. The trustees of every textile school receiving financial aid from the commonwealth shall, on or before the thirtieth day of January in each year, make to the general court a report containing a concise statement as to the buildings, equipment and resources of the school, the courses and methods of instruction, the number of teachers and students, if any, who graduated therefrom. The report shall also contain a statement, verified by the oath of the treasurer of the school, and in such form as the auditor of accounts of the commonwealth shall prescribe, showing separately the amounts received during the previous calendar year from tuition fees, from the commonwealth, from any city or town, and from all other sources, and also showing the expenditures of the school during the same period, under the heads of maintenance, construction, and new equipment, and also the financial condition of the school at the close of said year.”

Chapter 445, Acts of 1912, so amends the foregoing act as to change the fiscal year of textile corporations from the calendar year to the school year. It reads as follows:—

“SECTION 1. The fiscal year for which appropriations for textile schools shall be made and for which the treasurers of the said schools shall make their reports shall for the year nineteen hundred and thirteen begin on January first and continue to July first, nineteen hundred and fourteen; and thereafter the said year shall begin on the first day of July and shall continue until the first day of July of the succeeding year.”

SECTION 2. So much of chapter two hundred and forty-eight of the acts of the year nineteen hundred and four and of chapter two hundred and eleven of the acts of the year nineteen hundred and five as is inconsistent herewith is hereby repealed.”

TRUSTEES OF THE LOWELL TEXTILE SCHOOL IN ACCOUNT  
WITH A. G. POLLARD, TREASURER

LOWELL, MASS., June 30, 1914.

MAINTENANCE ACCOUNT

Paid for—

Teachers' salaries .....	\$35,973.18	
Administration salaries .....	6,243.91	
Employees' salaries .....	7,370.36	
General Expense .....	7,983.08	
Supplies .....	4,628.68	
Power and light .....	5,635.87	
Special Service .....	446.10	
Contingent Account .....	3,839.34	
Insurance .....	3,508.88	
Tuitions (rebate) .....	79.55	
Chemistry deposits .....	155.45	
	<hr/>	\$75,864.40

Deduct ledger debits as follows:—

Cash received from—

Special service .....	\$ 589.12	
Interest .....	188.55	
Chemistry deposits .....	2,257.71	
Supplies .....	1,661.63	
Telephone tolls .....	8.19	
Insurance .....	3,182.10	
Miscellaneous .....	113.59	
Stock .....	64.92	
	<hr/>	8,065.81

Net cost of maintenance ..... \$67,798.59

Cash received from—

Commonwealth of Massachusetts .....	\$45,000.00	
City of Lowell .....	9,000.00	
Tuitions .....	13,017.79	
	<hr/>	67,017.79

Deficiency ..... \$ 780.80

EQUIPMENT ACCOUNTS

*Chemistry and Dyeing Department, Special Equipment Account*

Balance June 30, 1913 .....	\$ 2,413.27	
Balance June 30, 1914 .....	2,413.27	

*New Equipment Account*

Balance June 30, 1913 .....	\$ 32.33	
Amount expended .....		\$ 32.33

*Finishing of Cotton Fabrics Equipment Account*

Balance June 30, 1913 .....	\$ 1,392.99	
Amount expended .....		432.25
Balance June 30, 1914 .....	960.74	



### Electrical Laboratory Equipment Account

Balance June 30, 1913 .....	\$ 2,650.87	
Amount expended .....		2,647.89
Balance June 30, 1914 .....	2.98	

### Textile Testing Equipment Account

Balance June 30, 1913 .....	1,755.95	
Amount expended .....		1,247.36
Balance June 30, 1914 .....	508.59	

### Boiler House

Balance June 30, 1913 (Overdrawn) .....	\$ 3,506.16	
Amount received from sale of brick .....	29.00	
Amount expended .....		1,244.10
Balance June 30, 1914 (Overdrawn) .....	4,721.26	
Total paid for equipment .....		\$ 5,603.93

### SUMMARY OF RECEIPTS AND EXPENDITURES BROUGHT DOWN

	RECEIVED	PAID
Cash on hand June 30, 1913 .....	\$ 2,328.55	
Maintenance .....	67,017.79	\$67,798.59
Textile Testing Equipment .....		1,247.36
Finishing Equipment .....		432.25
Electrical Laboratory Equipment .....		2,647.89
New General Equipment .....		32.33
Boiler House Equipment .....	29.00	1,244.10
	<u>\$69,375.34</u>	<u>\$73,402.52</u>
Boiler House Equipment deficiency carried forward to \$15,000. Equipment appropriation for 1914-15 .....	\$ 4,721.26	
Loan .....	10,000.00	\$10,000.00
	<u>84,096.60</u>	<u>83,402.52</u>
Cash on hand June 30, 1914 .....		694.08
	<u>\$84,096.60</u>	<u>\$84,096.60</u>

### FINANCIAL CONDITION JUNE 30, 1914

#### Assets

Land .....	\$105,639.00	
Buildings .....	312,902.48	
		\$418,541.48
Machinery and other equipment per inventory ....		263,041.45
Supplies .....		17,057.93
Cash on hand June 30, 1914 .....		694.08

\$699,334.94

#### Liabilities

Notes Payable .....	50,000.00
Resources .....	<u>\$649,334.94</u>

## LOWELL TEXTILE SCHOOL

## SPECIAL TRUST FUND ACCOUNT JUNE 30, 1914

*Special Book Prize Fund*

Amount contributed by Prof. Louis A. Olney for prizes of books to honor students in chemistry and dyeing:—

Cash on hand June 30, 1913 .....	\$ 60.78	
Amount received .....	50.00	
Amount expended .....		\$ 49.50
Balance June 30, 1914 .....		61.28
	<hr/>	<hr/>
	\$110.78	\$110.78

The above special fund is not included in the general account.

*To the Trustees of the Lowell Textile School.*

This is to certify that I have examined the books of the treasurer of the Lowell Textile School for one year ending June 30, 1914, and find them to be correctly kept and properly vouched.

A. A. LUDWIG,  
*Auditor for the Corporation.*

LOWELL, MASS., Jan. 19, 1915.

LOWELL, MASS., Jan. 19, 1915.

I certify that the foregoing is a correct statement of the receipts and expenditures on account of the Lowell Textile School during the year ended June 30, 1914, and of the financial condition of the corporation at the close of said period.

A. G. POLLARD, *Treasurer,*  
*Trustees of the Lowell Textile School*

LOWELL, MASS., JAN. 28, 1915.

MIDDLESEX, SS.

Subscribed and sworn to before me this day.

JOHN F. SAWYER,  
*Justice of the Peace.*

## STATEMENT OF LAND, BUILDINGS, EQUIPMENT, RESOURCES, ETC.

## LAND

Land bounded by Standish, Riverside and Moulton streets and Colonial Avenue and Merrimack River, about 14 acres .... \$105,639.09

## BUILDINGS

Southwick Hall: 80 by 265 feet; three stories, with two-story wings and finished basement under all; cost .....	142,120.30
Kitson Hall: 68 x 252 feet; one story and basement, and two additional floors of old boiler house, 63 by 68 feet .....	46,266.07
Falmouth Street building: 192 x 80 feet; three stories with sub-basement under head house, cost .....	67,211.80
Colonial Avenue laboratories: one story, 200 by 57 feet, and 60½ by 55 foot basement .....	21,985.41
New boiler and engine house, with coal pockets and subway .....	35,318.90
Total cost of buildings .....	<hr/> \$312,902.48

The floor space is occupied as follows:—

	Square Feet
Cotton yarns and knitting .....	12,000
Woolen and worsted yarns .....	28,160
Decorative art .....	1,446
Textile Design .....	15,360
Power weaving .....	15,360
Chemistry and dyeing .....	28,400
Finishing .....	10,606
Power plant .....	10,047
Mechanical and electrical engineering .....	24,297
Assembly and physical culture halls .....	10,800
Administration .....	2,930
Entrances, corridors, stairways, toilets, store, locker and lunch rooms .....	14,487
<b>Total floor space .....</b>	<b>173,893</b>
<b>Cost per square foot of floor space .....</b>	<b>\$1.77+</b>

# EQUIPMENT

Cotton yarn department .....	\$ 35,521.90
Woolen and worsted yarn department .....	47,818.57
Textile design and power weaving department .....	32,592.74
Chemistry and dyeing department .....	24,196.47
Textile engineering department .....	34,924.06
Finishing department .....	29,970.13
Language department .....	258.50
Corridors .....	237.50
Trustees' room .....	881.40
Lecture hall .....	481.36
General office .....	943.60
Principal's office .....	804.45
Janitor's rooms .....	417.56
Lunch room .....	214.01
Store room .....	206.75
Library .....	2,891.07
Students' room .....	704.00
Physical culture apparatus .....	558.29
Southwick Hall .....	11,495.79
Kitson Hall .....	1,326.90
Weave building and head house .....	4,466.80
Power plant .....	15,555.15
Miscellaneous equipment .....	16,574.45
<b>Total .....</b>	<b>\$263,041.45</b>

The increase in the value of equipment is .....

Of which was purchased .....	\$ 5,603.93
Of which was contributed .....	1,141.85
<b>Total .....</b>	<b>\$ 6,745.78</b>

# SUPPLIES

Cotton yarn department .....	\$ 204.38
Woolen and worsted yarn department .....	708.70
Textile design and power weaving department .....	3,297.10
Chemistry and dyeing department .....	10,455.87
Textile engineering department .....	398.21
Finishing department .....	429.33
Office .....	181.54
Janitor's rooms .....	35.35
Store Room .....	1,347.45
<b>Total .....</b>	<b>\$17,057.93</b>

## COURSES OF INSTRUCTION

## CLASSIFICATION OF DAY STUDENTS BY COURSES

	First Year	Second Year	Third Year	Fourth Year	Post- Graduate
Cotton manufacturing .....	1	6	3	-	-
Wool manufacturing .....	9	5	3	-	-
Textile design .....	10	-	-	-	-
Chemistry and dyeing .....	16	13	12	1	6
Textile engineering .....	18	12	8	3	8
Courses not chosen .....	3	-	-	-	-
	57	36	26	4	14
Total .....					137

## CLASSIFICATION OF EVENING STUDENTS BY COURSES

	First Year	Second Year	Third Year	Post- Graduate
Cotton spinning .....	39	8	9	-
Knitting .....	9	-	-	-
Woolen and worsted spinning .....	22	15	5	-
Textile designing .....	39	17	12	-
Freehand drawing .....	27	10	4	1
Elementary chemistry .....	57	20	-	-
Textile chemistry and dyeing .....	6	1	2	-
Analytical chemistry .....	3	1	1	-
Weaving (cotton) .....	28	-	-	-
Weaving (woolen and worsted) .....	26	-	-	-
Weaving (dobby and jacquard) .....	5	-	-	-
Mechanics .....	120	-	-	-
Steam engineering .....	-	19	-	-
Electricity .....	-	-	33	-
Mechanical drawing .....	61	16	14	-
Machine shop .....	29	11	-	3
Mathematics .....	20	-	-	-
Woolen and worsted finishing .....	19	-	-	-
	510	118	80	4
Total .....				712
Names counted twice .....				56
Net Total .....				656

## NUMBER OF STUDENTS

Day classes .....	137
Evening classes .....	656
Total .....	793
Graduated:—	
Day classes .....	12
Evening classes .....	86
Total .....	98

## TEACHERS

## NUMBER BY DEPARTMENTS

## Day and Evening Classes

Cotton yarn .....	3
Woolen and worsted yarn .....	3
Textile design and weaving .....	5
Chemistry and dyeing .....	7
Textile engineering .....	6
Finishing .....	1
Language and history .....	1
Physical culture .....	1
Total .....	27

## Evening Classes Only

Cotton yarn .....	1
Textile design and weaving .....	1
Textile engineering .....	1
Total .....	3
Average number of students per teacher .....	29

## ROSTER OF SCHOOL OFFICERS AND INSTRUCTION CORPS

## PRINCIPAL

Charles H. Eames, S.B., Massachusetts Institute of Technology, 1897. Experience: secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Company, Lowell, Mass., and engineer with Stone and Webster, electrical engineers, Boston, Mass.

## INSTRUCTORS

## Textile Engineering

George H. Perkins, S.B., chief instructor. Massachusetts Institute of Technology, 1899. Associate member American Society of Mechanical Engineers. Experience: draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood, Greene and Company, Boston, Mass.

Herbert J. Ball, S.B., instructor in mechanical engineering, efficiency and cost finding. Massachusetts Institute of Technology, 1906. Experience: draftsman, Watertown Arsenal, Watertown, Mass.; Lincoln and Williams Twist Drill Company, Taunton, Mass.

Ulysses J. Lupien, S.B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

David M. Hunting, S.B., instructor in mechanical drawing. Massachusetts Institute of Technology, 1912; Harvard University, 1904.



Charles H. Jack, instructor in machine-shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

Marcus J. Cole, S. B., instructor in mechanical drawing, evenings only. Massachusetts Institute of Technology, 1909. Experience: Assistant Master Mechanic, Bigelow-Hartford Carpet Company, Lowell, Mass.; Hamilton Emery and Corundum Company, Chester, Mass.; Barre Wool Combing Company, So. Barre, Mass.; L. B. Dow, consulting engineer, Boston, Mass.

### *Chemistry and Dyeing*

Louis A. Olney, S. B., M. S., chief instructor. Lehigh University, 1896. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

Robert R. Sleeper, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz and Company, New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.

Howard D. Smith, Ph. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor, Brown University and Tufts College; instructor, Beloit College.

Russell B. Stoddard, A. B., instructor in chemistry. Clark College, 1912.

Bertrand F. Brann, M. S., instructor in chemistry. Massachusetts Institute of Technology, 1912; University of Maine, 1909. Experience: instructor, Massachusetts Institute of Technology; assistant instructor, University of Maine.

Harold W. Leitch, B. T. D., instructor in chemistry. Lowell Textile School, 1912.

Elliott B. Plummer, assistant instructor in dyeing. Lowell Textile School, 1913.

### *Textile Design and Weaving*

Hermann H. Bachmann, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the city of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company, and Smith Webbing Company, Pawtucket, R. I.

Stewart Mackay, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.

Joseph Wilmot, instructor in power weaving and warp preparation. Lowell Textile School, 1908. Experience: United States Bunting Company, Lowell, Mass.; Draper Company, Hopedale, Mass.; Crompton and Knowles Loom Works, Worcester, Mass.

Albert E. Musard, instructor in Jacquard weaving. Experience: Oldham Mills, Philadelphia, Pa., and Paterson, N. J.; Gloucester Rug Mills, Gloucester City, N. J.; Binder and Ellis, Philadelphia, Pa.; Nye and Wait Carpet Company, Auburn, N. Y.

Elizabeth Whitney, instructor in freehand drawing, evenings only. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching.

### *Cotton Yarns*

Stephen E. Smith, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Lowell Machine Shop, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

Henry K. Dick, instructor in knitting. Experience: Linville Hosiery Factory, Lanark, Scotland.

George Goodchild, instructor in cotton yarns, evenings only. Lowell Textile School, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; DeLamar Copper Company, Chrome, N. J.

### Woolen and Worsted Yarns

- Edgar H. Barker, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.
- John H. Howker, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from city and guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Me.; Arlington Mills, Lawrence, Mass.
- John C. Lowe, instructor in woolen yarns. Lowell Textile School, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

### Finishing

- Arthur A. Stewart, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Canada; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.

### Cultural Courses

- Lester H. Cushing, A. B., Harvard College, 1911. Experience: Lowell Textile School, Lowell, Mass.

### Physical Culture

- Ralph E. Guillow, physical director. International Y. M. C. A. Training School, Springfield, Mass., 1910. Ten years' experience in physical culture in various schools and institutions.
- Archibald R. Gardner, M. D., medical adviser. Harvard University, 1902.

### POSITIONS HELD BY DAY GRADUATES

Directors of textile schools .....	2
Teachers .....	13
Mill vice-presidents .....	2
Mill treasurers and agents .....	11
Mill superintendents .....	17
Mill assistant superintendents .....	10
Mill foremen of departments .....	13
Assistant to superintendent .....	1
Mill auditors and accountants .....	3
Mill clerks .....	3
Second hands .....	8
Managers .....	17
Textile designers and fabric experts .....	17
Purchasing agents .....	2
In commission houses .....	3
Salesmen .....	10
Chemists, dyers and chemical salesmen .....	53
In government employ .....	6
In state employ .....	1
Textile manufacturing, unassigned .....	14
Industrial engineering .....	15
Mill engineering .....	8
Civil engineering .....	1
Electricians .....	1
Trade journalists .....	3
In business, textile distributing or incidental thereto .....	9
Other business .....	16

Students .....	3
Married women .....	3
Employment not known .....	21
Not employed .....	4
Deceased .....	7
Total .....	299

### METHODS OF INSTRUCTION

Instruction is first given in the principles of the sciences applicable to the textile and textile machinery industries, followed by instruction in the practical art,—the application of such sciences to the processes and machinery of manufacture.

Day instruction offers five courses of three or four years, as the student may elect, namely, cotton manufacturing, wool manufacturing, textile design,—including weaving and finishing,—chemistry and dyeing, and textile engineering.

All freshmen in the day classes during the first half year receive the same general instruction. At the beginning of the second half they are expected to choose one of the regular day courses. Each course, however, in addition to the specialty indicated by its name, includes some features of every other course, as such instruction, it is found, adds to the efficiency of the pupil by giving added breadth in the line he has chosen.

While there are several regular courses offered they may be generally grouped in three grand divisions, namely, textile engineering, chemistry and dyeing and textile design.

Textile engineering includes the mechanism of all machinery used in all departments of the school, and also machine-shop practice; instruction in the generation, transmission and application of power, whether steam, hydraulic, electrical or gas. In boiler and engine testing, for which a very complete and modern laboratory is provided, the pupils are called upon to make, or are afforded opportunities for conducting, continuous twenty-four hour tests, boiler and plant tests, etc. This division also includes mill construction of all modern types, viz., steel and concrete masonry and wood, and combination of both, involving the laying out of plants, shafting, etc.; the use of the transit in surveying; physics as involved in the testing of fibres, yarns and fabrics; mechanical drawing; and the plans for and the construction of equipment. The pupil is first thoroughly grounded in the principles of mechanical, electrical and hydraulic engineering before attempting the more advanced and specialized problems. The higher mathematics form an important part of the



work of this department. Here the plans for the school buildings are prepared, and all construction conducted during the summer vacation is by the engineers and pupils who remain for practical experience in this line of work.

Chemistry and dyeing involves a thorough course in chemistry, followed by an applied course, first in the laboratories, and finally on commercial vats, presses, kiers, dryers, etc., in raw stock, yarns and fabrics. A special and growing branch is the making of dyes from raw minerals, vegetables, oils, etc. A special laboratory is equipped for testing coal and oil.

Textile design includes, first, instruction in color, conventionalizing of nature forms, historic ornament, etc., fundamental to all branches of decorative art, and then in the application thereof to textiles. Included under this head is all fabric weaving and finishing.

Incidental to these general divisions is instruction in English, German, French and physical culture.

For evening instruction the day courses are subdivided into sixteen courses. These courses are arranged to cover substantially the same subject-matter as the day courses, but planned to meet the demand of those who wish instruction in special branches and who do not necessarily wish to pursue as complete a course as do those who attend the day classes. If an evening student wishes to cover the same subjects as are offered in the day classes he may do so, and can attain rank in a diploma course by satisfactorily passing the necessary examination.

Unlike most schools the same instructors serve day and evening, thus insuring to the evening pupils from the mills and shops the same able and thorough instruction as the day pupils, for it does not necessarily follow that the humbler youth should have a poorer school.

It has for some years been growing more and more evident that our instructors and pupils were being overworked, and were not given sufficient time in a three-year course to deal with some advanced specialties. A postgraduate course was established to relieve the situation, for which has been substituted a regular four-year course with the offer of degrees, as recommended by the State Board of Education, in textile engineering (B. T. E.) and textile dyeing (B. T. D.), the school thus passing from the technical to the technological class as originally intended. More time will thus be given to present features of the curriculum and advanced work, to which are added scientific mill management,

cost finding, mill accounting, general corporation organization, commercial law and usage, patent laws and practice, principles of banking, etc., useful and essential to our graduates as they advance to positions of responsibility in the textile industry. (See House Document No. 3, session of 1912.)

Most of our day pupils matriculate directly from the high schools or academies. So thorough is their instruction that they graduate directly into employment in the industry or kindred lines, and, as they rapidly advance to the higher responsibilities, they need instruction that the school has lacked time to impart. Hence, in addition to the technique of the industry is now included instruction incidental but essential to the positions they occupy or aspire to. At some technical schools and colleges it is sought to meet this need by recommending prescribed courses in reading after graduation; but this, being optional with the graduate, may or may not be given attention. By limiting these subjects to essentials and making them obligatory it is thought the pupils will more certainly be benefited.

The scientific method in mill management—with special reference to “efficiency or production engineering” as presented by Taylor, Gantt, Gilbreth, Emerson, Gunn, Richards, Cooke, Patterson and others, mostly of the eminent Society of Mechanical Engineers—and cost finding, are leading features of the fourth year now added to the three-year courses in chemistry and textile engineering.

The published works of these engineers, or papers specially prepared by them for this school, have been furnished the fourth-year pupils; and when they are grounded in the principles of this scientific method of management they are instructed in the methods of applying them to textile processes, and are then required to pass an examination therein.

Mindful that pragmatism, as expounded by the late Professor James of Harvard, may, from the standpoint of economics, be summed up in this, that a theory is valuable only as it is found useful in application, or, more homely expressed, “the proof of the pudding is in the eating,” efficiency literature is sent out to our graduates, already filling a great variety of positions, with the request that they use their eyes and brains and give us the benefit of their criticism and the problems they meet with from their various standpoints of supervision in practical manufacture.

Nearly all of our graduates go to positions that make it most important that they be fully instructed as to the latest improved methods of dealing with labor; and thoroughly trained as they are at the school in the make-up, installation and operation of machinery, they should be exceptionally capable of testing the various efficiency systems proposed. Papers already received from those out in employment and from their employers indicate that "efficiency or production engineering" has a useful place in the textile industry and will, when fully applied to all departments of a mill, result in as great benefits to employees and employers alike as has resulted in its application at the shops. Provision is now made for efficiency instruction.

Eminent efficiency engineers are gradually being called to textile mills, and there is a steadily growing demand by them for our thoroughly trained graduates to fill the various staff and division positions required to carry out their instructions as they install features of scientific efficiency methods of dealing with labor. From such staffs it is expected will eventually come an able body from which to draw managers of production. The number of graduates called for by efficiency engineers is steadily increasing. It is gratifying to notice that these calls are generally from the largest and most successful mills.

This year we have added to our engineering department thorough instruction in cost finding and the principles of efficiency engineering by a very competent instructor.

The rapid application of electricity to textile machinery and processes calls for an extension of our electrical equipment, and the necessary equipment is being installed. Fibre, yarn and fabric testing, which are such prominent features of foreign schools are also being provided for. A complete equipment of cotton finishing machinery is now in place. These additions to the plant have not yet involved any addition to our corps of instructors.

#### CORPORATION SUPERVISION

An annual meeting is held in January for the election of officers, reception of annual reports and the transaction of such other business as may be proposed, not committed to the Board of Directors. Monthly meetings of the trustees at the school, sitting as a Board of Directors, are provided for. They appoint such agents, school officers and teachers as they find necessary, prescribe their duties and fix their compensation. The president

(in his absence the vice-president) presides at all the meetings of the corporation and Board of Directors, and performs such other duties and exercises such other authority as the corporation or Board of Directors may from time to time devolve on him. The treasurer is charged with the general care of the pecuniary affairs and concerns of the corporation, he to receive all revenues and make all authorized disbursements. He is required to report receipts and expenditures and financial conditions quarterly to the Board of Directors, and annually to the corporation. He is also to execute all contracts made by express authority of the corporation or Board of Directors and approved by the president. He, with the president, clerk, treasurer and two elected trustees, composes a finance committee which passes upon all orders for expenditures and inspects all bills before payment. No expenditure is authorized or liability incurred in excess of money available to meet it, except by vote of the Board of Directors at a meeting in the call for which due notice of the nature of such proposed expenditure or liability is given. The clerk is required to keep a record of all regular and special meetings of the corporation and Board of Directors, notify all members of such meetings seven days in advance and perform such other duties as the corporation or Board of Directors may require of him. He is a resident trustee, devoting his time to the development work.

A corporation committee, of which the resident trustee is chairman, is charged with the organization and conduct of a non-resident postgraduate course.

In addition to the finance committee there are general committees of ways and means, building and legislative, and lectures. There is also a sub-committee for each department of the school, composed, as far as is practicable, of trustees identified in manufacturing with the specific branch of industry to which their department relates. They are to make recommendations to the Board of Directors as to the needs, etc., of their respective departments, and especially as to the new equipment, floor space, etc., and to perform such other duties as the directors may require of them.

The principal of the school is charged with its conduct, and is directly accountable to the Board of Directors, making monthly reports thereto and such recommendations and special reports as to efficiency, discipline, etc., as in his judgment are required.



## CONCLUSION

Now that each division and branch of textile manufacture contemplated in the original plan for the school is substantially provided for,—though there are considerable gaps in equipment still to be filled, and we must spend annually a few thousand dollars to keep pace with invention and improved processes,—special attention is being centered upon an increase of pupils which will not involve corresponding increase in the cost of administration and maintenance. Whether we have few or many pupils, to give a complete manufacturing course in the manipulation of all commercial fibres, we must provide a sufficient number of instructors to cover instruction in all textile processes. We can handle with our present force a very much larger body of day pupils, and we shall bend all our energies to obtain them.

A leading feature of our fourth year now added to our textile engineering and chemical courses is "efficiency" in dealing specially with labor, followed with the necessary revision of cost finding. The extraordinary economic and sociological results which have followed the introduction of the Taylor and the Gantt Bonus Systems into the national arsenals and larger machine shops has turned the attention of the eminent efficiency engineers, mostly of the great Society of American Engineers, to the possibilities for like results in the textile industry, and several of the larger concerns are being reorganized to conform to efficiency methods. In introducing the system the engineer first makes himself thoroughly familiar with the plant, outlines his plan, and calls for a staff of technically trained supervisors, each one being assigned to a special function. Naturally he looks to our graduates for such employees, the result being that quite a body of these are now stationed at cotton, woolen, worsted, flax and silk mills, training the operatives under the constant inspection of the engineers. In fact, we cannot supply the demand. From such corps of staff employees will naturally come the more efficient superintendents and agents of the future.

Under such supervision the ambitious operative is constantly increasing his efficiency, and increased compensation follows. The friction between the two opposing camps of employees and employers rapidly disappears, and the whole body becomes a unit, all working for the success of the concern and all sharing in such success. That the methods and instruction imparted at this school so fit into this efficiency system is evidence that we are

soundly grounded on the natural law of the progress of mankind, the progress of the mass being but the sum of the progress of the individual through experience and education.

A hasty visit to most of the mills where our graduates are working under efficiency engineers only strengthened our conviction of the great importance of this work.

A complete outfit for yarn and fabric testing by Louis Schopper of Leipzig, Germany, is now installed.

#### APPROPRIATIONS NEEDED

The rapid increase of non-resident evening pupils about fifty per cent., who are unable to meet the cost of their instruction, is creating a deficiency in our maintenance appropriation which we have estimated for in our request for the year 1915-1916.

We have also estimated for an additional boiler which the insurance experts certify as urgent to insure constant fire protection.

Also \$15,000 for general equipment, \$2,000 for sanitary protection, and \$10,800 for additional equipment for dye making.

The urgency for these appropriations is set forth in detail in our petition for these appropriations.

#### TOTAL RECEIPTS OF THE LOWELL TEXTILE SCHOOL FROM ORGANIZATION TO JUNE 30, 1914

FOR THE PLANT		
From the Commonwealth .....		\$288,331.66
From other sources—manufacturers and others .....		398,866.97
Excess of outside contributions .....		<u>\$110,535.31</u>
FOR MAINTENANCE		
From the Commonwealth .....		495,500.00
From City of Lowell .....	\$156,000.00	
From earnings (pupils' fees) .....	205,166.83	
		<u>361,166.83</u>
Excess of Commonwealth contributions .....		<u>\$134,333.17</u>
AGGREGATE CONTRIBUTIONS FOR ALL PURPOSES		
From Commonwealth brought down:—		
For plant .....	\$288,331.66	
For maintenance .....	495,500.00	
		<u>\$783,831.66</u>
Total Commonwealth contribution .....		<u>\$783,831.66</u>

From other sources:—

For plant .....	\$398,866.97	
For maintenance .....	361,166.83	
	<hr/>	760,033.80
Excess of contributions by Commonwealth for all purposes .....		\$ 23,797.86

Respectfully submitted,

TRUSTEES OF LOWELL TEXTILE SCHOOL,

JAMES T. SMITH,  
*Corporation Clerk.*

A. G. CUMNOCK,  
*President.*

LOWELL, MASS., Jan. 28, 1915

## APPENDIX.

## RESIDENCE OF DAY STUDENTS

Allston, Mass. ....	1	Middleboro, Mass. ....	1
Andover, Mass. ....	3	Newton, Mass. ....	1
Belmont, Mass. ....	1	No. Andover, Mass. ....	2
Billerica, Mass. ....	1	Somerville, Mass. ....	3
Boston, Mass. ....	4	So. Essex, Mass. ....	1
Brighton, Mass. ....	1	Stoneham, Mass. ....	1
Brookline, Mass. ....	1	Swampscott, Mass. ....	1
Cambridge, Mass. ....	6	Taunton, Mass. ....	1
Chicopee Falls, Mass. ....	1	Uxbridge, Mass. ....	1
Clinton, Mass. ....	1	Ware, Mass. ....	1
Cochituate, Mass. ....	1	Wayland, Mass. ....	1
Danvers, Mass. ....	1	Webster, Mass. ....	1
Dedham, Mass. ....	1	West Chelmsford, Mass. ....	1
Dorchester, Mass. ....	2	West Groton, Mass. ....	1
East Acton, Mass. ....	1	Wilmington, Mass. ....	1
East Bridgewater, Mass. ....	1	Winchester, Mass. ....	3
Everett, Mass. ....	1	Winthrop, Mass. ....	1
Gloucester, Mass. ....	5	Woburn, Mass. ....	1
Greenwood, Mass. ....	1	Connecticut .....	1
Groton, Mass. ....	2	Delaware .....	1
Haverhill, Mass. ....	2	Illinois .....	1
Hingham, Mass. ....	1	Maine .....	6
Holyoke, Mass. ....	1	New Hampshire .....	6
Housatonic, Mass. ....	1	New Jersey .....	1
Hudson, Mass. ....	1	New York .....	5
Lawrence, Mass. ....	8	Pennsylvania .....	2
Lowell, Mass. ....	33	Rhode Island .....	2
Malden, Mass. ....	3	Washington, D. C. ....	1
Manchester, Mass. ....	1		
Melrose, Mass. ....	1	Total .....	137

## PREVIOUS EDUCATION OF DAY STUDENTS

High school or Preparatory school .....	118	Grammar .....	4
College .....	11	Agricultural school .....	1
Military Academy .....	2		
Worcester Polytechnic .....	1	Total .....	137

## RESIDENCE OF EVENING STUDENTS

Lowell, Mass. ....	478	Dracut, Mass. ....	1
Lawrence, Mass. ....	104	Graniteville, Mass. ....	1
Methuen, Mass. ....	21	Hyde Park, Mass. ....	1
Andover, Mass. ....	14	Reading, Mass. ....	1
No. Andover, Mass. ....	9	Tyngsboro, Mass. ....	1
No. Chelmsford, Mass. ....	4	Wakefield, Mass. ....	1
Forge Village, Mass. ....	4	Westford, Mass. ....	1
No. Billerica, Mass. ....	3	Winchester, Mass. ....	1
Ayer, Mass. ....	2	Woburn, Mass. ....	1
Ballardvale, Mass. ....	1	Nashua, N. H. ....	2
Boston, Mass. ....	3		
Brookline, Mass. ....	1	Total .....	656
Dorchester, Mass. ....	1		



## PREVIOUS EDUCATION, EVENING STUDENTS

Grammar School .....	344
High School or Academy (day) .....	177
High School (evening) .....	69
College or University:—	
Amherst College .....	1
Bowdoin College .....	1
Brown University .....	1
Dartmouth College .....	2
Harvard College .....	3
Harboot College .....	1
Lawrence Scientific School .....	1
Mass. College Pharmacy .....	1
Ottawa University .....	1
Williams College .....	1
Yale University .....	1
Preparatory School .....	14
Business College .....	2
Military Academy .....	8
Technical School .....	3
Industrial School .....	3
Textile School .....	19
International Correspondence School .....	6
State Normal School .....	2
Agricultural School .....	2
Nautical Training School .....	2
Evening Drawing School .....	1
Total .....	4
	656

## OCCUPATION OF EVENING STUDENTS

Advertising writer .....	1	Colorist .....	3
Apprentice .....	17	Confectioner .....	1
Assistant general manager ....	1	Cost accountant .....	1
Assistant superintendent .....	2	Cotton inspector .....	2
Assistant to superintendent ....	1	Cutter .....	2
Back boy .....	2	Designer .....	10
Baker .....	1	Doffer .....	7
Bleacher .....	1	Draftsman .....	11
Bander .....	1	Dresser .....	2
Battery boy .....	3	Dryer tender .....	1
Blacksmith .....	1	Dyer .....	13
Bread wrapper .....	1	Dynamo tender .....	1
Boarder .....	1	Electrical worker .....	3
Bobbin boy .....	1	Electrician .....	19
Boiler maker .....	1	Electric plater .....	1
Bookkeeper .....	1	Engineer .....	3
Boxmaker .....	5	Farmer .....	1
Bundle boy .....	3	Felt worker .....	1
Carbonizer .....	1	Filling carrier .....	2
Carder .....	4	Finisher .....	1
Carpenter .....	5	Fireman .....	6
Chauffeur .....	1	Fixer .....	7
Chemist .....	5	Folder .....	1
Checker .....	1	Gauger .....	1
Clerk .....	35	Harness looker .....	3
Cloth analyzer .....	4	Helper .....	21
Coachman .....	1	Inspector .....	2

Iron worker .....	1	Secretary .....	1
Knitter .....	5	Shearer .....	1
Laboratory assistant .....	3	Shoe worker .....	8
Laborer .....	4	Shipper .....	3
Lathe hand .....	1	Sizer .....	1
Leather worker .....	1	Slasher .....	1
Loom fixer .....	15	Spare hand .....	1
Machine erector .....	2	Spinner .....	8
Machinist .....	48	Splitter .....	1
Master mechanic .....	1	Sorter .....	3
Mechanic .....	3	Steamfitter .....	4
Manager .....	2	Stenographer .....	2
Mill clerk .....	36	Stitcher .....	3
Office boy .....	1	Student .....	64
Oiler .....	2	Superintendent .....	3
Operative .....	36	Sweeper .....	6
Overseer .....	16	Tailor .....	1
Painter .....	2	Teacher .....	2
Pattern maker .....	8	Tester .....	1
Percher .....	1	Third hand .....	6
Photographer .....	1	Timekeeper .....	6
Pin setter .....	1	Tool boy .....	1
Plumber .....	1	Toolmaker .....	1
Printer .....	3	Twister .....	1
Quiller .....	1	Unemployed .....	14
Repairman .....	2	Warp dresser .....	1
Representative .....	1	Warp splitter .....	2
Rodman .....	1	Weaver .....	30
Roving boy .....	1	Weigher .....	1
Rubber worker .....	1	Winder .....	2
Salesman .....	3	Wireman .....	1
Sample clerk .....	1	Wool sorter .....	1
Sample weaver .....	4	Yarn boy .....	5
Sashmaker .....	1		
Second hand .....	30	Total .....	656

TRUSTEES OF THE LOWELL TEXTILE SCHOOL 1913-1914  
(Incorporated, 1895)

HONORARY TRUSTEES

FREDERICK FANNING AYER, ESQ., New York City  
CHARLES H. HUTCHINS, *President*, Crompton and Knowles Loom Works

THE CORPORATION OFFICERS

A. G. CUMNOCK, *President*  
JACOB ROGERS, *Vice-President*

JAMES T. SMITH, *Clerk*  
A. G. POLLARD, *Treasurer*

TRUSTEES

On the Part of the Commonwealth of Massachusetts  
Ex officiis

HIS HONOR EDWARD P. BARRY,  
Lieutenant Governor.

DR. DAVID SNEDDEN,  
Commissioner of Education.

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916, FRANKLIN W. HOBBS, Brookline, 1914,  
Treasurer, Boott Mills. Treasurer, Arlington Mills.

On the Part of the City of Lowell

Ex officiis

HON. DENNIS J. MURPHY,  
Mayor of Lowell.

HUGH J. MOLLOY,  
Superintendent of Public Schools

JAMES H. CARMICHAEL,  
President Municipal Council

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

PERMANENT TRUSTEES

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

FREDERIC S. CLARK, Boston and North Billerica, Treasurer, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Attorney-at-Law.

WALTER E. PARKER, Lawrence, Agent Pacific Mills, Boston corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

FRANK E. DUNBAR, Lowell, Attorney-at-Law, and President, Appleton Company, Boston corporation, mills at Lowell.

FRANKLIN NOURSE, Lowell, late Agent, Lawrence Manufacturing Company, Boston corporation, mills at Lowell.

JACOB ROGERS, Lowell, President, Tremont and Suffolk Mills, Boston corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

WILLIAM E. HALL, Lowell, Treasurer, Shaw Stocking Company.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.

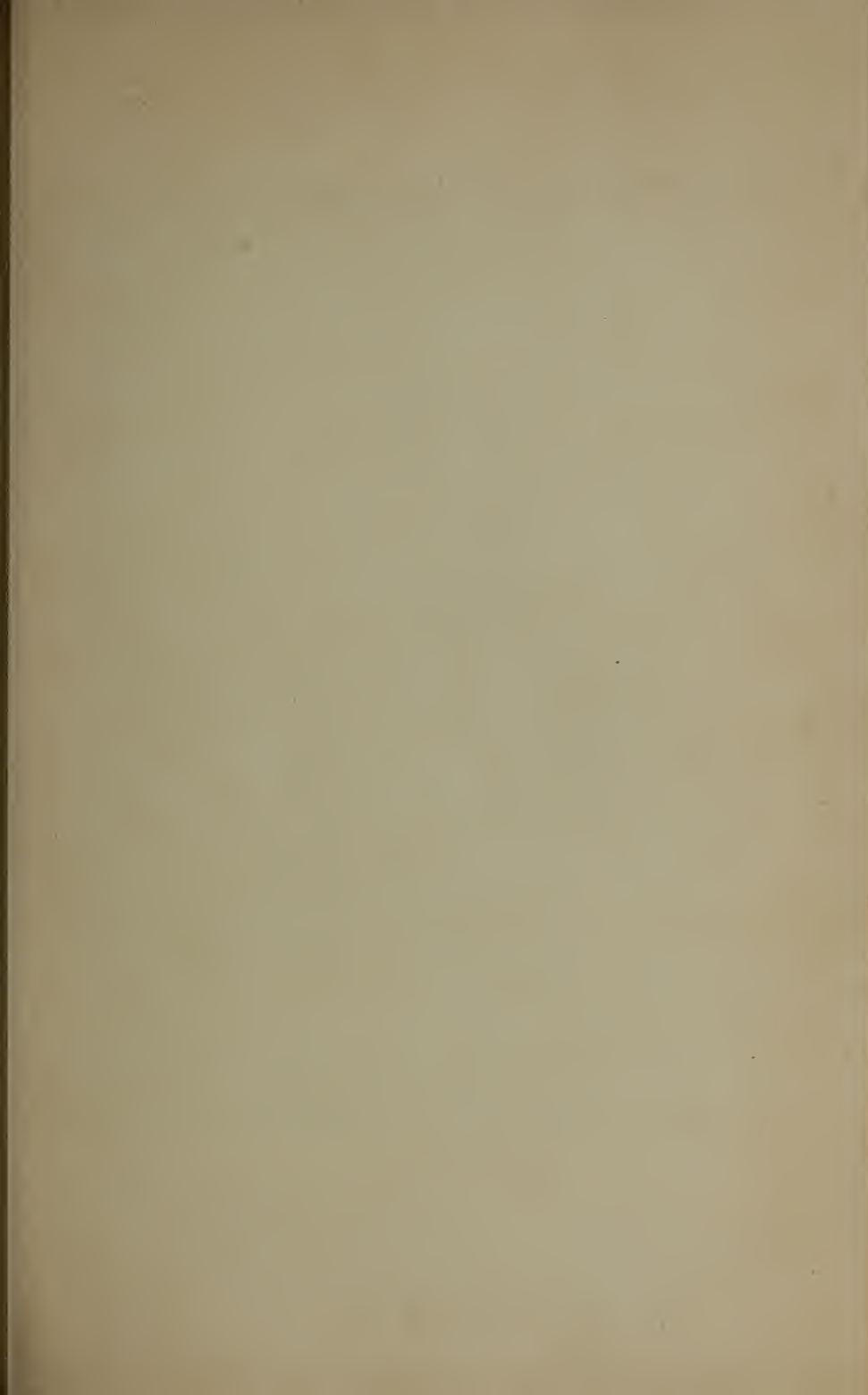
#### **Additional Trustees elected by Alumni under Act of 1905**

For term ending June 30, 1916: DEXTER STEVENS, class of 1904, Superintendent, Esmond Mills, Esmond, R. I.

For term ending June 30, 1915: T. ELLIS RAMSDELL, class of 1902, Agent, Monument Mills, Housatonic, Mass.

For term ending June 30, 1918: ROYAL P. WHITE, class of 1904, Agent, Stirling Mills, Lowell, Mass.

For term ending June 30, 1917: ARTHUR C. VARNUM, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.





SOUTHWICK HALL

COLONIAL AVENUE BUILDING AND  
FALMOUTH STREET BUILDING

BULLETIN  
OF THE  
Lowell Textile School  
LOWELL, MASS.

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*Issued Quarterly*

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1915 - 1916

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Entered August 26, 1902, at Lowell, Mass., as second class matter,  
under Act of Congress of July 16, 1894.

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*Moody Street and Colonial Avenue*



# CALENDAR

FOR 1915

JANUARY						
S	M	T	W	T	F	S
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

FEBRUARY						
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	..	..	..	..	..	..
..	..	..	..	..	..	..

MARCH						
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

APRIL						
..	..	..	1	2	3	..
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

MAY						
..	..	..	..	..	1	..
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

JUNE						
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

JULY						
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

AUGUST						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

SEPTEMBER						
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..

OCTOBER						
..	..	..	..	1	2	..
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

NOVEMBER						
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

DECEMBER						
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

FOR 1916

JANUARY						
S	M	T	W	T	F	S
..	..	..	..	..	1	..
2	3	4	5	6	7	8
9	10	11	12	13	14	15
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FEBRUARY						
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MARCH						
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MAY						
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JUNE						
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AUGUST						
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SEPTEMBER						
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OCTOBER						
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NOVEMBER						
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DECEMBER						
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24	25	26	27	28	29	30
31	..	..	..	..	..	..



# CALENDAR

## January—June, 1915

January 25, Mon.	Semi-annual examinations begin.
February 8, Mon.	SECOND TERM begins.
February 22, Mon.	Washington's Birthday—Holiday.
March 13, Sat.	End of first five-week period of second term.
April 14, Wed.	Certificates awarded to Evening Graduates.
April 17, Sat.	End of second five-week period of second term.
April 16, Fri. to April 19, Mon. inclusive	Recess.
May 24, Mon.	Final examinations begin.
May 31, Mon.	Memorial Day—Holiday.
June 4, Fri.	Diplomas awarded to Day Graduates.
June 15-16, Tues and Wed., 9 A. M.	First entrance examinations.

## September, 1915—June, 1916

September 7 and 8, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 20, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 23, Thurs.—7 P. M.	Entrance examinations for evening students begin. They will be held on Thursday evenings until opening of classes.
September 27, Mon.	DAY SCHOOL YEAR begins.
October 4, Mon.	Evening school year begins.
October 12, Tues.	Columbus Day—Holiday.
October 30, Sat.	End of first five-week period of first term.
November 24, Wed. to November 27, Sat. inclusive	Thanksgiving Recess.
December 4, Sat.	End of second five-week period of first term.
December 23, Thurs. to January 1, Sat. inclusive	Christmas Recess.
January 24, Mon.	Semi-annual examinations begin.
February 7, Mon.	SECOND TERM begins.
February 22, Tues.	Washington's Birthday—Holiday.
March 11, Sat.	End of first five-week period of second term.
April 12, Wed.	Certificates awarded to Evening Graduates.
April 15, Sat.	End of second five-week period of second term.
April 15, Sat. to April 19, Wed. inclusive	Recess.
May 22, Mon.	Final examinations begin.
May 30, Tues.	Memorial Day—Holiday.
June 2, Fri.	Diplomas awarded to Day Graduates.
June 13, and 14, Tues. and Wed. 9 A. M.	First entrance examinations.

## September, 1916—January, 1917

September 5 and 6, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 18, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 21, Thurs. 7 P. M.	Entrance examinations for evening students begin. They will be held on Thursday evenings until opening of classes.
September 25, Mon.	DAY SCHOOL YEAR begins.
October 2, Mon.	Evening school year begins.
October 12, Thurs.	Holiday in observance of Columbus Day.
October 28, Sat.	End of first five-week period of first term.
November 29, Wed. to December 2, Sat. inclusive	Thanksgiving Recess.
December 2, Sat.	End of second five-week period of first term.
December 23 Sat. to January 3, Wed. inclusive	Christmas Recess.



KITSON HALL AND CAMPUS

SOUTHWICK HALL

# Trustees of the Lowell Textile School

(Incorporated 1895)

## Honorary Trustees

FREDERICK FANNING AYER,  
New York City

CHARLES H. HUTCHINS,  
President, Crompton and Knowles Loom Works, Worcester, Mass.

## The Corporation

### Officers, 1915

ALEXANDER G. CUMNOCK, President  
JOHN JACOB ROGERS, Vice-President

JAMES T. SMITH, Clerk  
ARTHUR G. POLLARD, Treasurer

### Trustees

On the part of the Commonwealth of Massachusetts

#### *Ex Officiis*

HIS HONOR GRAFTON D. CUSHING  
Lieutenant Governor

DR. DAVID SNEDDEN  
Commissioner of Education

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916  
Treasurer, Boott Mills

JOHN T. DONEHUE, Lowell, 1918

On the part of the City of Lowell

#### *Ex Officiis*

HON. DENNIS J. MURPHY  
Mayor of Lowell

HUGH J. MOLLOY  
Superintendent of Public Schools

JAMES H. CARMICHAEL  
President Municipal Council

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

### Permanent Trustees

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Attorney-at-Law.

WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston Corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

FRANK E. DUNBAR, Lowell, Attorney-at-Law, and President, Appleton Company, Boston Corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

WILLIAM E. HALL, Lowell, Treasurer, Shaw Stocking Company.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston Corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.

FRANKLIN W. HOBBS, Brookline, President, Arlington Mills, Boston Corporation, mills at Lawrence.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.

EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston Corporation, mills at Lowell.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDALL, Housatonic, Agent, Monument Mills, class of 1902.

### Additional Trustees Elected by Alumni Under Act of 1905

\*For term ending June 30, 1915: T. Ellis Ramsdell, class of 1902, Agent, Monument Mills, Housatonic, Mass.

For term ending June 30, 1916: Dexter Stevens, class of 1904, Superintendent, Esmond Mills, Esmond, R. I.

For term ending June 30, 1917: Arthur C. Varnum, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.

\*For term ending June 30, 1918: Royal P. White, class of 1904, Agent, Stirling Mills, Lowell, Mass.

\*Elected by the corporation as Permanent Trustees.



GENERAL VIEW OF SCHOOL, MERRIMACK RIVER

## GENERAL COMMITTEES

### *FINANCE*

ALEXANDER G. CUMNOCK, Chairman  
ARTHUR G. POLLARD  
CHARLES F. YOUNG  
FREDERICK A. FLATHER  
JAMES T. SMITH

### *BUILDING AND LEGISLATIVE*

ALEXANDER G. CUMNOCK, Chairman  
FREDERICK A. FLATHER  
FREDERIC S. CLARK  
HENRY A. BODWELL  
ARTHUR G. POLLARD  
WILLIAM E. HALL  
JOHN J. ROGERS  
JAMES T. SMITH  
FRANKLIN W. HOBBS  
ARTHUR C. VARNUM

### *WAYS AND MEANS*

JAMES T. SMITH, Chairman  
FREDERIC S. CLARK  
JOHN T. DONEHUE  
WALTER E. PARKER  
ROYAL P. WHITE

### *LECTURES*

JAMES T. SMITH, Chairman  
JOHN J. ROGERS  
HENRY A. BODWELL  
ARTHUR C. VARNUM  
FREDERIC S. CLARK

## DEPARTMENT COMMITTEES

### *Cotton Spinning*

WILLIAM E. HALL, Chairman  
T. ELLIS RAMSDELL  
EVERETT H. WALKER  
DEXTER STEVENS

### *Woolen and Worsted Spinning*

WALTER E. PARKER, Chairman  
EUGENE S. HYLAN  
GEORGE E. KUNHARDT

### *Chemistry and Dyeing*

WILLIAM R. MOORHOUSE, Chairman  
CHARLES F. YOUNG  
FREDERIC S. CLARK  
WILLIAM A. MITCHELL

### *Decorative Art*

JAMES T. SMITH, Chairman  
FREDERICK LAWTON

### *Designing, Weaving and Finishing*

FREDERIC S. CLARK, Chairman  
GEORGE E. KUNHARDT  
ROYAL P. WHITE  
ARTHUR G. POLLARD

### *Mechanical and Electrical Engineering*

HENRY A. BODWELL, Chairman  
FREDERICK A. FLATHER  
JAMES T. SMITH

### *Athletics and Grounds*

JAMES T. SMITH, Chairman  
WILLIAM R. MOORHOUSE  
ROYAL P. WHITE





ASSEMBLY HALL.

# OFFICERS OF ADMINISTRATION AND INSTRUCTION

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## ADMINISTRATION

CHARLES H. EAMES, S. B., Principal of the School  
WALTER B. HOLT, Bursar                      STELLA F. MORRILL, Registrar  
FLORENCE M. LANCEY, Librarian              RENA J. LANDERS, Secretary

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## CHIEFS OF DEPARTMENTS

LOUIS A. OLNEY, S. B., M. S.,  
Professor of Chemistry; in charge of Department of  
Chemistry and Dyeing

EDGAR H. BARKER,  
In charge of Department of Woolen and Worsted  
Yarns

GEORGE H. PERKINS, S. B.,  
In charge of Department of Textile Engineering

ARTHUR A. STEWART,  
In charge of Department of Finishing

STEPHEN E. SMITH,  
In charge of Department of Cotton Yarns and  
Knitting

HERMANN H. BACHMANN,  
In charge of Department of Textile Design and  
Power Weaving

LESTER H. CUSHING, A. B.,  
In charge of Department of Languages, History and  
Economics

## INSTRUCTORS

JOSEPH WILMOT, •  
Instructor in Jacquard Weaving and Warp Preparation

JOHN N. HOWKER,  
Instructor in Wool Sorting and Scouring

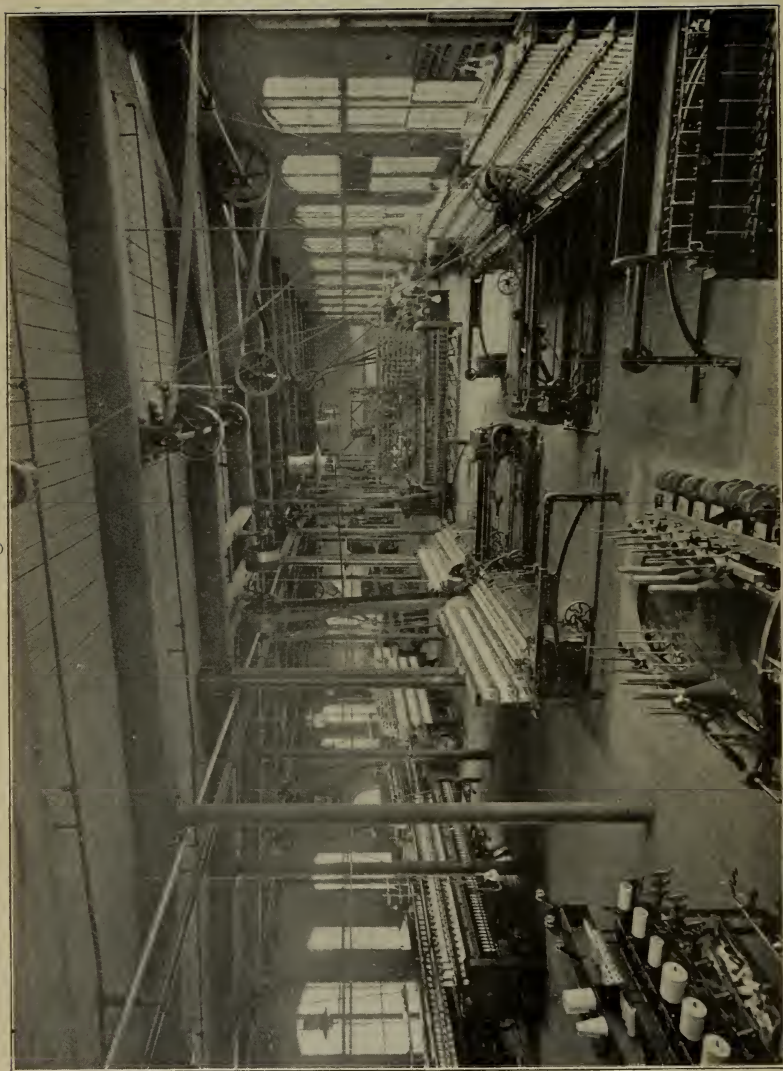
STEWART MACKAY,  
Instructor in Textile Design and Cloth Analysis

ROBERT R. SLEEPER,  
Instructor in Dyeing

HERBERT J. BALL, S. B.,  
Instructor in Mechanical and Efficiency Engineering

ULYSSES J. LUPIN, S. B.,  
Instructor in Mathematics, Physics and Electrical  
Engineering





COTTON YARN DEPARTMENT

## INSTRUCTORS—CONTINUED

- HOWARD D. SMITH, PH. D.,  
Instructor in General Chemistry and Qualitative  
Analysis
- RUSSELL B. STODDARD, A. B.,  
Instructor in Organic Chemistry
- JOHN C. LOWE,  
Instructor in Woolen and Worsted Yarns
- CHARLES H. JACK,  
Instructor in Machine Shop Practice
- HENRY K. DICK,  
Instructor in Knitting and Cotton Yarns
- BERTRAND F. BRANN, S. B., M. S.,  
Instructor in Quantitative Analysis
- DAVID M. HUNTING, A. B., S. B.,  
Instructor in Mechanical Drawing and Mechanism
- WARREN H. WHITEHILL,  
Instructor in Chemistry
- ANDREW YOUNGER,  
Instructor in Weaving
- GEORGE O. RICHARDSON,  
Assistant Instructor in Dyeing
- RALPH E. GUILLOW,  
Instructor in Physical Culture
- MARCUS T. COLE, S. B.,  
Evening Instructor in Mechanical Drawing
- E. ELIZABETH WHITNEY,  
Evening Instructor in Freehand Drawing
- GEORGE GOODCHILD,  
Evening Instructor in Cotton Yarns
- ARCHIBALD R. GARDNER, M.D.,  
Medical Adviser

## FACULTY

Principal and Chiefs of Departments

## LECTURERS FOR THE CURRENT YEAR

- GARDNER W. PEARSON, Attorney-at-Law  
Patent Law
- J. W. NEWTON, A. B.,  
Filing Systems
- A. W. THOMPSON, S. B.,  
Humidification
- A. R. CALVO,  
"Permutit"



COTTON YARN DEPARTMENT

## The Lowell Textile School

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The Lowell Textile School was established, and is managed, by the Trustees of the Lowell Textile School of Lowell, Massachusetts, "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry," as set forth in the act of incorporation.

The movement for the establishment of the School dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

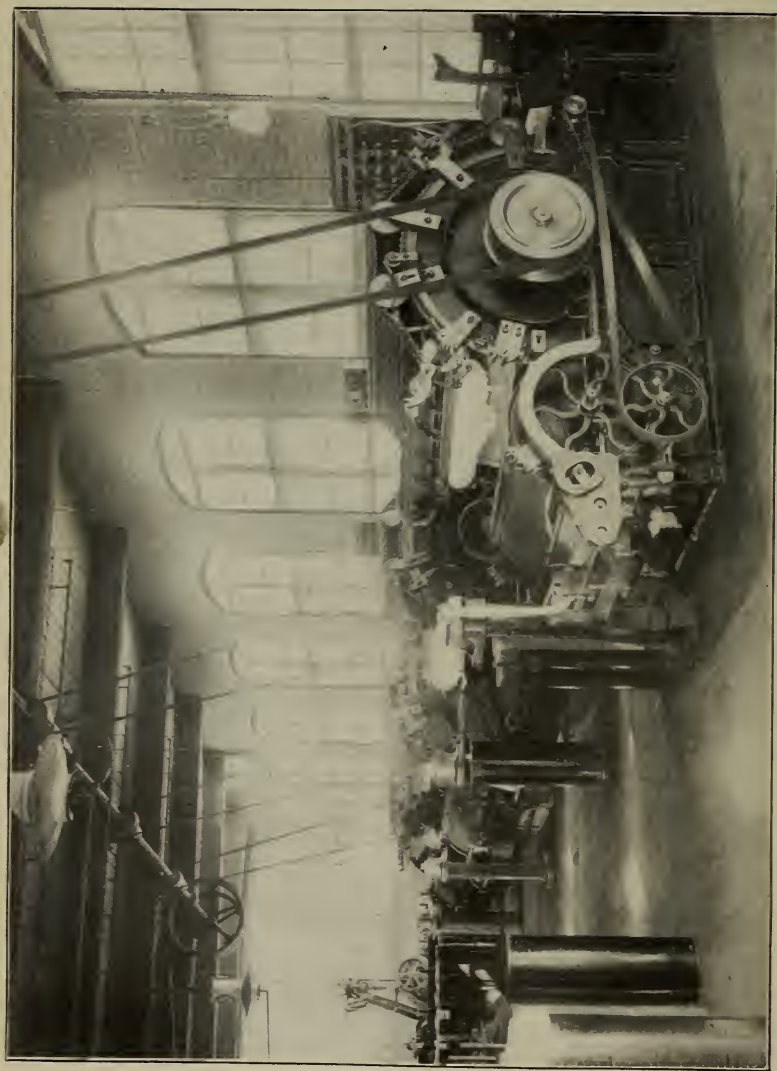
Not only did the normal progress of the textile industry require such a school, but through the rapid development of the manufacture of the coarser cotton fabrics in the southern states, a crisis had arrived in the leading industry of New England which could only be met by wider and more thorough application of the sciences and arts for the production of finer and more varied fabrics.

Modeled on the lines of the departments of the higher Polytechnic Institutes, it offers thorough instruction in the elements and principles of the sciences and arts applicable to textile and kindred branches of industry. Its courses of instruction treat of the application of these principles to the processes and machinery required in the manufacturing of all varieties of textile fabrics.

In industrial education the distinction between Trade and Technical Industrial Schools is coming to be understood. The Lowell School belongs to the latter class. Beginning with limited equipment, instructing staff, and means, instruction at first was by Mill or Trade school methods—the pupil was brought directly to the machine, its parts and operation in manufacturing explained to him. The curriculum was, however, rapidly extended, as contemplated in the original plan, department after department opened and equipped, and commodious and well adapted buildings provided for a permanent home.

While the progress of invention and the demands of ever changing markets will compel constant improvement in methods and additions to the very extensive equipment, the period of





COTTON CARDING

establishment is substantially closed. All departments are open for instruction in all branches of the textile art under extensive and able corps of instructors and assistant instructors.

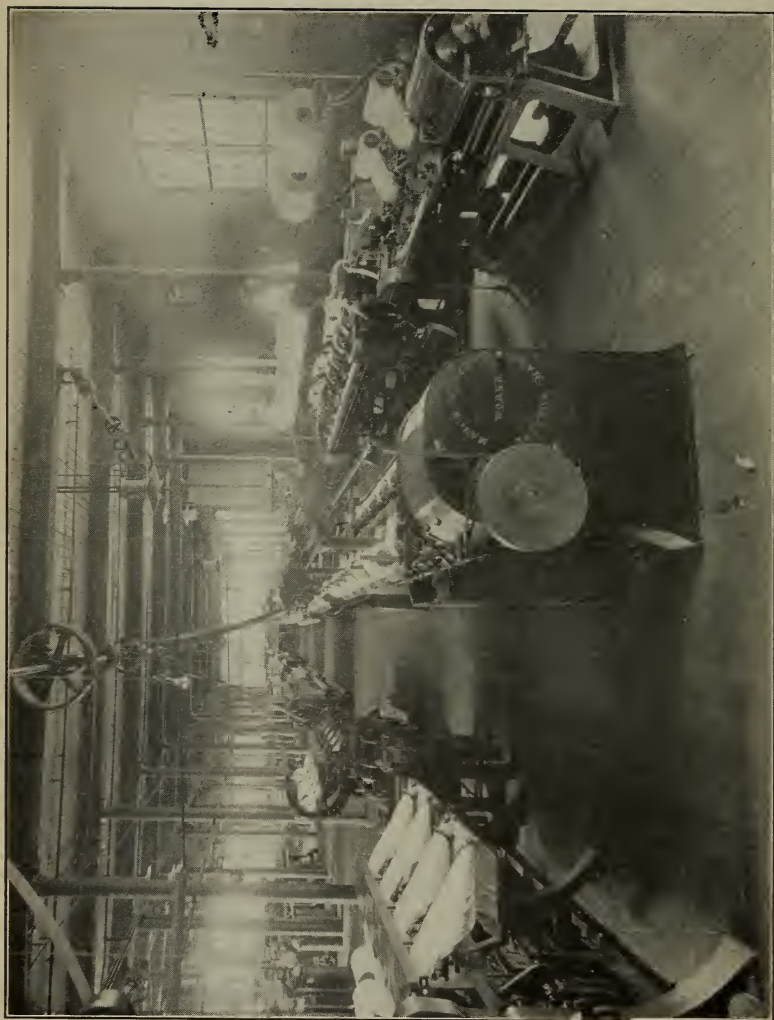
Of the incorporators the permanent trustees (limited to twenty) are mainly representatives, as president, treasurer, agent, or superintendent, of the management of great textile or textile machine corporations of the Commonwealth, and associated with them are, *ex officiis*, His Honor, the Lieutenant Governor and the Commissioner of the State Board of Education, and two trustees appointed for four-year terms by the Governor and Council. The Mayor, the President of the Municipal Council, the Superintendent of Schools, and a representative of the textile council of the city of Lowell are also members. At the session of 1905 the Legislature authorized the graduates of the school to elect two additional trustees, and by an act of 1906 the number was increased to four for four-year terms, one being elected each year.

By the terms of the by-laws at least three-fourths of the permanent trustees must be persons "actually engaged in or connected with textile or kindred manufactures."

Lowell, Massachusetts is called the "Mother Textile City of America," and in locating the school at this center a considerable advantage is secured for the reason that every commercial fibre is utilized in the products of the great Merrimack Valley Textile district. The practical work of the school is therefore kept closely in touch with the several branches of the industry which are included in the courses of study.

His Excellency, Governor Roger Wolcott, formally opened the school on January 30, 1897, there being present a large and representative gathering of men from the textile industries in all portions of New England. The regular classes of the school were opened on February 1, 1897, and have been regularly conducted since that time.

His Excellency, Governor John L. Bates, dedicated the buildings forming the permanent home of the school on February 12, 1903, in the presence of a large number of guests representing the Legislature as well as the educational, textile, and commercial interests of the Commonwealth.



COTTON COMBING



The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualifications equivalent to those given by a regular four year course of a high school or academy of good standing.

For those who are unable to attend the day courses classes are held for about twenty weeks of the year in the evening. The courses then given are similar to those of the day, but are aimed especially to meet the needs of those working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education.

The school has so advanced in the standard and character of its work, as well as the standard for admission to its day classes, that upon application to the Legislature of the State of Massachusetts permission was given to the school to grant the degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Dyeing (B. T. D.) upon the satisfactory completion of prescribed four year courses.

The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this.

There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric, within the school.

The growth of the school has been constant, as is evident from the fact that when it was opened February 1, 1897, there were 32 day and 110 evening pupils. January 1, 1915, the roster showed 144 day pupils and 730 evening pupils or 874 in all.

On January 1, 1903, the School was transferred from the rented quarters that it had occupied for five years to the site and building where it is permanently located.

The site is a commanding one, consisting of about fifteen acres at a high elevation, on the west bank of the Merrimack River, extending to and overlooking the rapids of Pawtucket Falls, the first to be utilized for power weaving in America on an extensive scale. This site was contributed by Frederick Fanning



WOOLEN AND WORSTED YARN DEPARTMENT

Ayer, Esquire, of New York City, and the Proprietors of the Locks and Canals on the Merrimack River. The buildings consist of Southwick Hall, Kitson Hall, the Falmouth Street Building and Colonial Avenue Laboratories, with power plant east of the Falmouth Street Building.

Southwick Hall was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esquire, of New York City, and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 x 90 ft., having three stories and two wings 80 x 85 ft. each with two stories and well lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing Departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing Laboratory for the manufacture of dyes from the crude material.

Kitson Hall, dedicated to the memory of Richard Kitson was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor.

This hall makes a right angle with Southwick Hall, is 60 feet by 252 feet and has one story and a basement. The first floor is occupied by the Cotton Yarn and Knitting Departments, while the basement contains the Mechanical Engineering Laboratory, Machine Shop, and Students' Locker and Recreation Rooms.

The Falmouth Street Building forms the third side of the quadrangle and consists of two portions, one 75 x 130 ft., three stories, and the head house 70 x 80 ft., three stories and basement. The building is occupied by the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment for the manufacture from wool in the fleece of finished woolen and English or French spun worsted yarns. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms.

Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department. The work



WOOL SORTING



of construction was also in charge of the engineers of this department. The building completes the fourth side of the quadrangle and in outward appearance corresponds to the architectural features of the other school buildings. It is a single story building and has the dimensions of 195 x 60 ft. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing Departments that occupy this building. The funds for this building were provided by the state of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows:

Cotton Yarns and Knitting .....	12,000 sq. ft.
Woolen and Worsted Yarns .....	28,160 " "
Textile Design and Decorative Art .....	16,806 " "
General Chemistry and Dyeing Laboratories	28,400 " "
Finishing Cotton, Woolen and Worsted .....	10,606 " "
Power Weaving .....	15,360 " "
Textile Engineering .....	24,297 " "
Power Plant .....	10,047 " "
Assembly and Physical Culture Halls .....	10,800 " "
Entrances, corridors, stairways, etc. ....	14,487 " "

The additional floor space is devoted to Administration Offices, Library, Assembly Halls, Class Rooms, Store Rooms, etc.

Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, namely, the needs of the textile and kindred industries, it has developed its curriculum, its instruction methods, and equipment as those needs arose or became evident. At this writing its chemical and dyeing, decorative art, design, yarn and weaving departments are liberally housed, equipped, and provided with able instructors for the highest efficiency, though additional floor space is required and is being provided as the roster of pupils increases. This objective will be kept constantly in view and as new demands are presented an effort will be made to extend courses, equipment and floor space.



WOOL SCOURING AND CARBONIZING



## EQUIPMENT

The equipment of machinery, inventoried July 1, 1914, at \$263,041.45, is most varied for textile educational purposes, and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to mutual advantage of student and manufacturer.

### COTTON DEPARTMENT

#### *Ginning*

- One 50 saw gin made by Daniel Pratt Gin Co., Prattsville, Ala.
- One Prior Roller Gin.

#### *Opening, Picking and Waste Machinery*

An outfit of Kitson Picking Machinery from works of Saco-Lowell Shops, Lowell, Mass., including:

- One No. 7 Opener with Automatic Feeder connected by Perham patent Cleaning Trunk to
- One 40 in. Single Breaker Breaker Lapper with Condenser and gauge box feed.
- One 40 in. Single Beater Intermediate Finisher Lapper with Perham & Davis Sectional Plate Evenner, apron to double four laps.
- One 40 in. Single Beater Finisher Lapper with Perham & Davis Sectional Plate Evenner, apron to double four laps, Kirschner Patent Carding Beater.
- One Roving Waste Opener.
- One Thread Extractor.

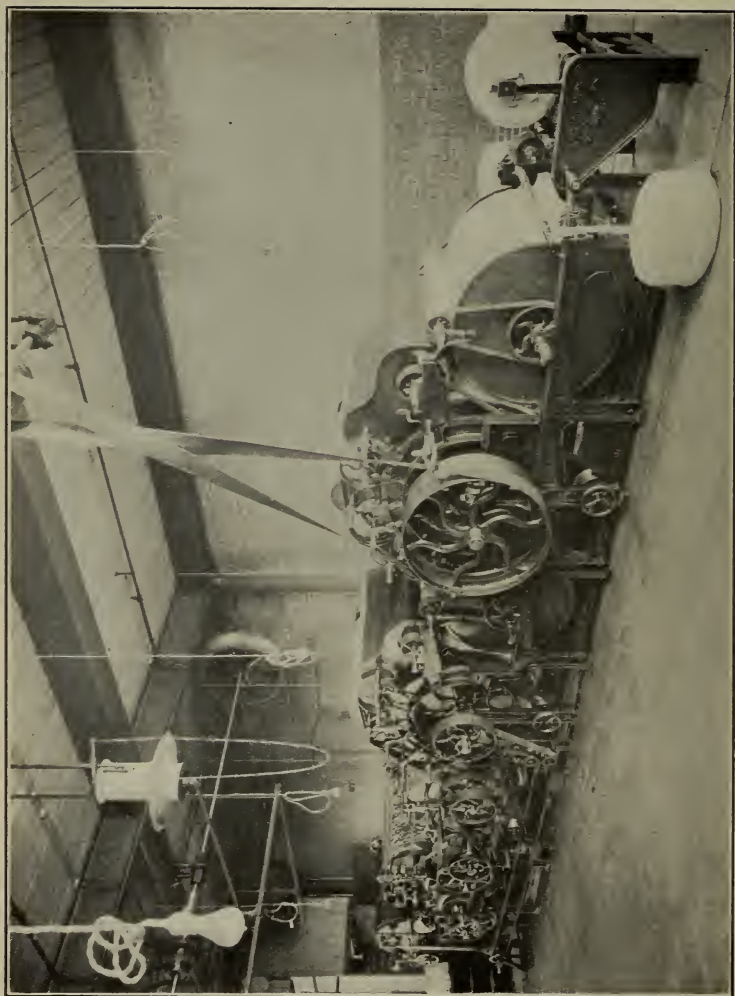
#### *Carding, Combing and Drawing*

The following machinery made by the Saco-Lowell Shops, Lowell, Mass.

- One Top Flat Card.
- Three Revolving Flat Cards.
- Two Railway Heads.
- Two Drawing Frames.

One of these cards is equipped with the Chapman Electric Neutralizer, made by the Chapman Electric Neutralizer Co., Portland, Me.

- From Saco-Lowell Shops
- Stripping Rolls, etc.



WORSTED CARD

From the Whitin Machine Works, Whitinsville, Mass.

One 40 in. Revolving Flat Card.

Card Grinding Rolls.

One Sliver Lapper.

One Six Head Ribbon Lapper.

One Four Head Ribbon Lapper.

One Two Head Comber.

One Six Head Comber.

One Eight Head High Speed Comber.

From the Mason Machine Works, Taunton, Mass.

One Sliver Lap Machine.

One Comber.

From John Hetherington & Sons, Ltd., Manchester, Eng.

One Two Head Comber.

One Model Comber Head.

### *Roving, Spinning and Twisting*

From Saco-Lowell Shops, Lowell, Mass.

One Slubber.

One Intermediate.

One Fine Frame.

One Jack Frame.

Three Ring Spinning Frames.

One Spinning Mule.

One Spooler.

One Wet and Dry Twister.

From Fales & Jenks, Pawtucket, R. I.

One Wet and Dry Twister.

From Draper Company, Hopedale, Mass.

One Wet and Dry Twister.

From Whitin Machine Works, Whitinsville, Mass.

Two Ring Spinning Frames.

From Woonsocket Machine and Press Co., Woonsocket, R. I.

One Intermediate Fly Frame

From Asa Lees Co., Oldham, England, Wm. Firth Company, Agents.

One Mule for fine spinning.

### *Miscellaneous Machinery of this Department includes:*

From the Saco-Lowell Shops, Lowell, Mass.

One Reel.

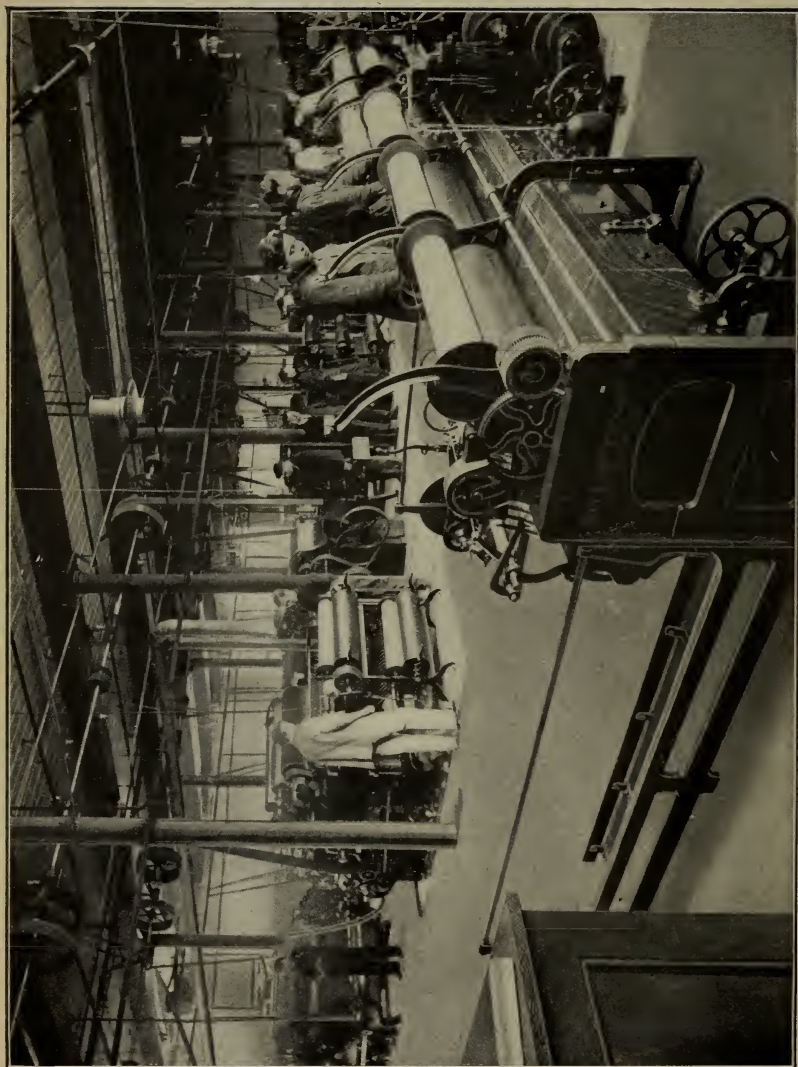
One Model Fine Fly Frame.

One Model Fly Frame Compound.

One Model Card Feed.

One Model Flat Grinding Device.

One Model Scroll Setting Device.



WOOLEN YARN DEPARTMENT

From Draper Company, Hopedale, Mass.

One Weeks Banding Machine.

One Moscrop Single Thread Testing Machine.

Miscellaneous Machines.

One Yarn Inspection Machine with blackboards.

Two Barbour Knotters.

Two Yarn Reels and Grain Scales.

One Power Yarn Tester.

One Twist Counter.

From Howard Brothers, Worcester, Mass.

One Exhibition Board of Hand Cards.

One Exhibition Board of Card Clothing.

The power for this department is furnished through:

One 24 h. p. Allis Chalmers motor, and one 15 h. p. Allis Chalmers motor.

### **Knitting Department Equipment**

#### *Winding Machinery*

One Universal Winder 6 spindles for cones and tubes.

One Payne Bobbin Winder.

One Foster Winder 10 spindles for cones and tubes.

#### *Hosiery Machines*

One Acme full automatic  $3\frac{3}{4}$  in. cyl. 160 needles.

One Acme full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 120 needles.

One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Mayo Model C full automatic  $3\frac{3}{4}$  in. cyl. 220 needles.

One Scott & Williams new automatic  $3\frac{3}{4}$  in. cyl. 176 needles.

One Banner full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Brinton full automatic  $3\frac{3}{4}$  in. cyl. 176 needles.

One Branson hand machine  $3\frac{1}{2}$  in. cyl. 80 needles.

Machines in this group are equipped with special attachments for producing lace front work, high splicing, double soling and striped work.

One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 160 needles.

One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.

One Wildman Fancy Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.

One Wildman Ribber  $3\frac{1}{2}$  in. cyl. 220 needles.

One Wildman Striping Ribber  $5\frac{1}{4}$  in. cyl. 240 needles.

One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.

One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.

One Brinton Tie Machine  $1\frac{3}{4}$  in. cyl. 100 needles.

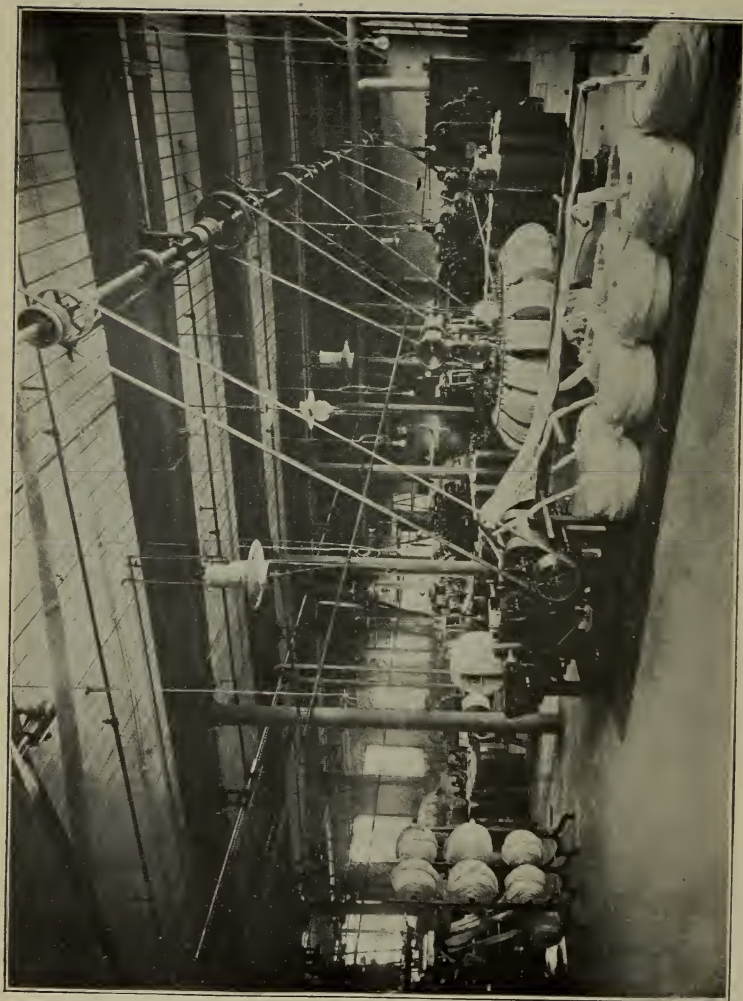
#### *Underwear Machinery*

One Crane Spring Needle Machine 19 in. cyl. 1040 needles.

One Scott & Williams Ribber 19 in. cyl. 12 cut.

One Wildman Ribber 20 in. cyl. 8 cut.





WOOL COMBING



### *Flat Machines*

- One Lamb glove machine 8 in. bed 6 cut.
- One Lamb Knitting Machine 18 in. bed 5 cut.
- One Lamb Sweater Machine 24 in. bed 4 cut.
- One Grosser Sweater Machine 32 in. bed 3 cut.
- One Grosser Jacquard Machine 16 in. bed 10 cut.
- One Dubied Scarf Machine 18 in. bed 18 cut.

### *Finishing Machines*

- One Grosser 2 thread looper 22 point.
- One Hepworth looper 16 point.
- One Beattie looper 16 point.
- One Beattie looper 3 point.
- Five Union Special Sewing Machines for Overseaming, Double Stitch Covering, Seaming and Welting and Vest Finishing.
- Five Merrow Sewing Machines including two shell stitch machines and three overseaming and crocheting machines.
- Three Singer Machines for plain sewing, button holing and button sewing.

The power for this department is supplied through a 7½ h. p. 220 volt Westinghouse motor.

## **WOOLEN AND WORSTED DEPARTMENT**

### *Wool Sorting and Grading*

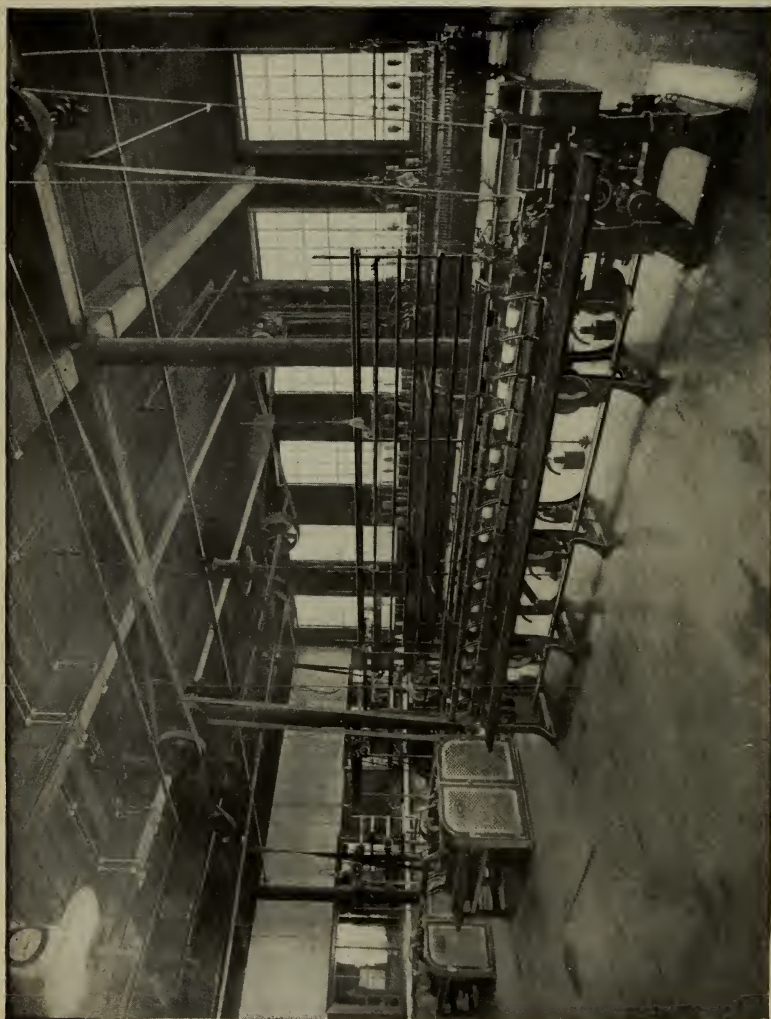
This department is thoroughly equipped with benches, baskets, etc., for sorting wool in a convenient manner, and in addition there are samples of all grades and types of wool and other fibres.

### *Scouring and Carbonizing*

Wool Scouring Machinery, C. S. Sargents' Sons Corp., Graniteville, Mass., consisting of

- Cone Duster for Grease Wool.
- Two Scouring Bowls, each 17 ft. x 24 in., with Parallel Rakes.
- One Automatic Feeder for Scouring Bowls.
- One Automatic Feeder for Dryer.
- One Single Apron Dryer.
- Carbonizing Screw Acid Tank.
- Carbonizing Duster, with Crush Rolls.
- From North Chelmsford Machine Co.
- One Rinse Box.
- From Schaum & Uhlinger, Philadelphia, Pa.
- One Hydro-Extractor.
- From C. S. Dodge, Lowell, Mass.
- One Shoddy Picker.
- One Bagging Stand.

The power for this department is supplied through a 20 h. p. General Electric 220 volt motor.



FRENCH SPINNING

## Woolen

### *Picking*

- One Parkhurst Burr Picker, Atlas Mfg. Co., Newark, N. J.
- One Mixing Picker, Davis & Furber Machine Co., North Andover, Mass., equipped with Improved Mixing Picker Feed, and Spencer Oiler, both made by George S. Harwood & Son, Boston, Mass.

### *Carding*

One set of Woolen Cards, including :

First Breaker, Second Breaker and Finisher, Davis & Furber Machine Co., North Andover, Mass.; this set of cards equipped with Bramwell First Breaker Feed, (George S. Harwood & Son, Boston, Mass.); Torrance Balling Head and Creel, (Torrance Mfg. Co., Harrison, N. J.) between First Breaker and Second Breaker; Apperly Feed, (George S. Harwood & Son, Boston, Mass.) between Second Breaker and Finisher, and Combination Rub Rolls and Apron Condenser, (Davis & Furber Machine Co., North Andover, Mass.), on Finisher. These cards are for medium or coarse work.

One set of Davis & Furber Woolen Cards, including :

First Breaker, Second Breaker and Finisher. This set of cards equipped with Bramwell First Breaker Feed, (George S. Harwood & Son, Boston, Mass.); Apperly Feed with Kemp Traveller, (George S. Harwood & Son, Boston, Mass.), between First Breaker and Second Breaker; Bates Feed (E. V. Bates, Lowell, Mass.), between second Breaker and Finisher, and Davis & Furber Double Apron Condenser, on Finisher. These cards are for fine work.

Both sets of cards are equipped with Chapman Electric Neutralizer, made by Chapman Electric Neutralizer Co., Portland, Me.

One Sample Mixing Card, Torrance Mfg. Co., Harrison, N. J.

### *Spinning*

One Spinning Mule, 120 spindles, Davis & Furber Machine Co., North Andover, Mass.; Bobbin Holders, supplied by American Bobbin Holder Co., W. Medway, Mass.

One Spinning Mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; Bobbin Holders supplied by Murdock & Geb, Franklin, Mass.

One 1907 Fancy Yarn Twister, 20 spindles, Davis & Furber Machine Co., North Andover, Mass.

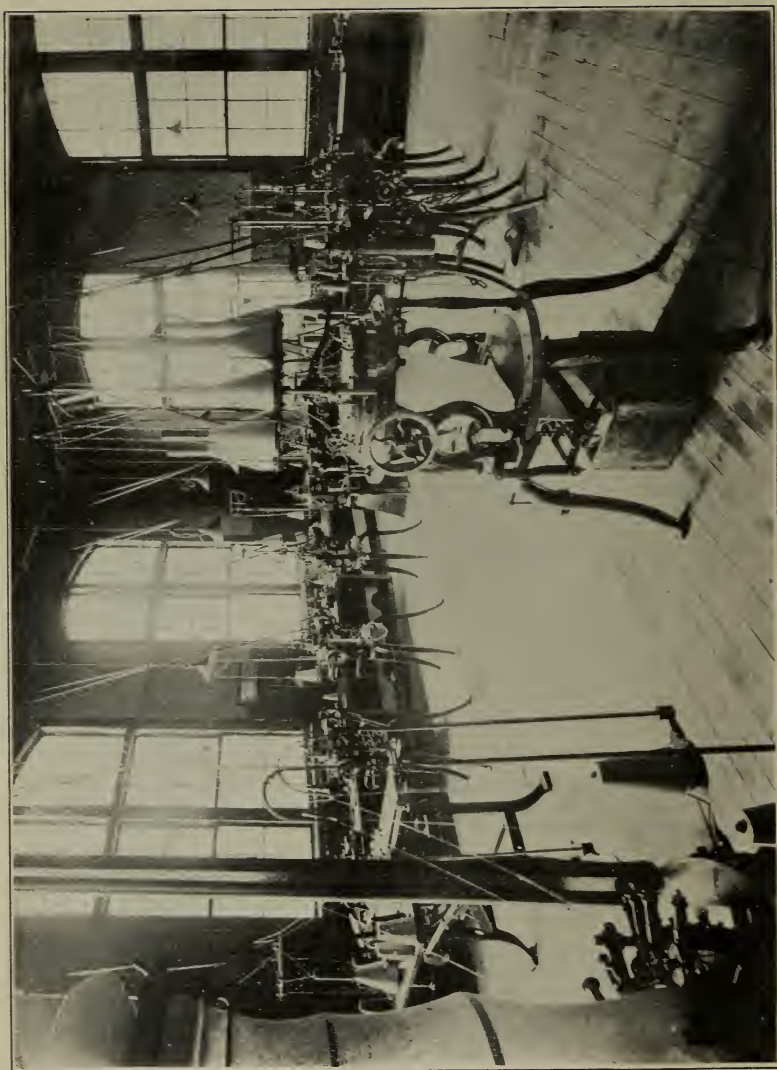
### *Card Grinding*

One Roy Grinding Frame, B. S. Roy & Son, Worcester, Mass.

Two Roy Traverse Grinders, B. S. Roy & Son, Worcester, Mass.

One Entwistle Traverse Grinder, T. C. Entwistle Co., Lowell, Mass.

One Complete set of Carder's Tools, W. H. Brown, Worcester, Mass.



KNITTING DEPARTMENT



## Worsted

### *Carding*

One 50-inch Double-cylinder Worsted Card (4 lickerin), Davis & Furbur Machine Co., North Andover, Mass., equipped with Bramwell Feed, George S. Harwood & Son, Boston; also equipped with a Chapman Electric Neutralizer, Chapman Electric Neutralizer Co., Portland, Me.

### *Backwashing*

One Double Bowl, Five Cylinder Backwasher, with Gill Box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland Patent pressure motion.

### *Gilling*

One Doubling Balling Head Gill Box (with double screws), Saco-Lowell Shops, Lowell, Mass.

One Weigh Gill Box and Creel, Saco-Lowell Shops, Lowell, Mass.

### *Combing*

One Baller, (punch), Crompton & Knowles, Worcester, Mass.

One Noble Worsted Comb, Crompton & Knowles, Worcester, Mass.

### *Gilling*

One Finishing Can Gill Box, Hall & Stell, Keighley, England.

One Finishing Balling Head Gill Box, Hall & Stell, Keighley, England.

## **Bradford System of Drawing, Spinning and Twisting**

The following Drawing, Spinning and Twisting Machinery, from Prince Smith & Son, Keighley, England.

One Revolving Creel for 12 Balls. One Double Head Can Gill Box.

One 2 Spindle Drawing Box. One 2 Spindle Gill Box.

One 2 Spindle Drawing Box. One 12 Spindle Flyer Spinner.

One 2 Spindle Weigh Box. One 12 Spindle Ring Spinner.

One 4 Spindle First Finisher. One 12 Spindle 2 Fold Cap Twister.

One 12 Spindle Dandy Reducer. One 12 Spindle 6 Fold Ring Twister.

One 12 Spindle Cap Spinner.

The following Drawing, Spinning and Twisting Machinery from the Saco-Lowell Shops, Lowell, Mass.

One 2 Spindle Drawing Box. One 8 Spindle Cone Rover.

One 6 Spindle Second Finisher. One 48 Spindle Cap Spinner, 5 ft. end.

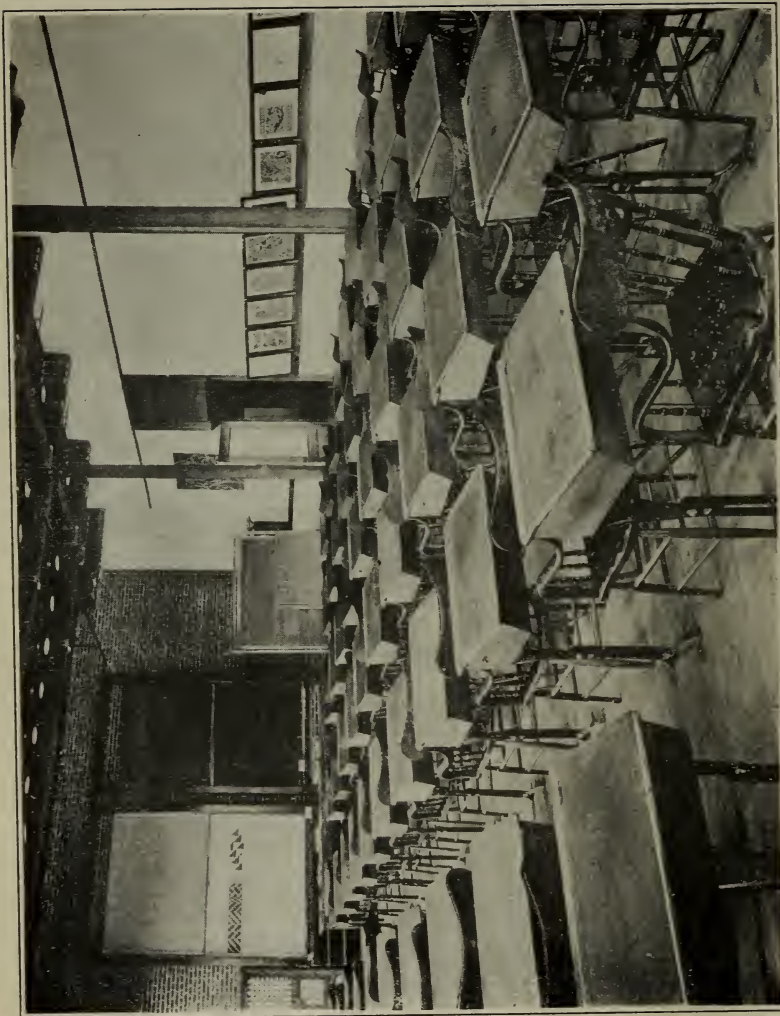
One 24 Spindle Dandy Rover. One 48 Spindle Cap Spinner, 4 ft. end.

One 6 Spindle Cone Reducer. One 48 Spindle Boyd Ring Twister.

One Six Gang Universal Winder, equipped for cones or straight tubes, Universal Winding Co., Boston, Mass.

One Tape Band Sewing Machine, The Singer Mfg. Co., New York.

The power for the Yarn Department as well as for the Power Weaving Department is supplied through two 24 h. p. Allis-Chalmers motors



DESIGN LECTURE ROOM



## French System of Drawing and Spinning

The machinery made by the "Societe Alsacienne de Constructions Mechaniques" at Mulhouse, France, consists of the following:

Peigneuse-Laine modèle P. L. B.	Model P. L. B. Comb with creel for 24 doublings.
Intersecting de 2 têtes. Pass. I and II après Peigneuses.	Intersecting Gill Box (2 heads)
Gill Box (2 têtes)	Gill Box (2 heads)
Étirage à Frottoirs (2 têtes)	1st Drawing (2 heads)
tirage à Frottoirs (2 têtes)	2nd Drawing (2 heads)
Étirage à Frottoirs (2 têtes)	3rd Drawing (2 heads)
Étirage Réunion (4 Peignes)	Reducer (4 Porcupines)
Bobinier de Chûte (8 Peignes)	Slubber (8 Porcupines)
Bobinier (8 Peignes)	1st Intermediate (8 Porcupines)
Bobinier (8 Peignes)	2nd Intermediate (8 Porcupines)
Bobinier (8 Peignes)	Rover (8 Porcupines)
Finisseur (16 Peignes)	Finisher (16 Porcupines)
Self-acting à Filer (150 Broches)	Self-acting Worsted Mule (150 Spindles)

The apparatus in this department for obtaining and preserving the requisite condition of humidity consists of:

Four Humidifiers of the American Moistening Co., Boston, Mass.

Twelve Turbo Humidifier Heads from The G. M. Parks Co., Fitchburg, Mass. The compressed air for these heads is supplied by an Ingersoll-Rand 8 x 8 steam driven air compressor located in power house.

The power for this department is supplied through a 15 h. p. Allis-Chalmers Co.'s 220 volt motor.

## Textile Testing Laboratory

Several years ago the importance of testing fibres, yarns and fabrics began to be appreciated and through the generosity of a friend a beginning was made by the establishment of a laboratory where the physical properties of textiles may be determined and studied. To the original equipment has been added several pieces of apparatus, so that there is in the laboratory the following equipment:—

One Bausch and Lomb D. D. Microscope provided with regular eye pieces and objective for low power, high power or photographic work.

One Eye Piece Micrometer.

One Filar Micrometer (1 inch equivalent eye piece) for refined diameter determinations.

One Standard Glass Stage with corrections from comparison against the International m. m.

Complete outfit for mounting slides and for taking photo-micrographs. Camera Lucida.

Microtome Sectioning Outfit.



DECORATIVE ART

- One Small Skein Testing Machine.
  - One Gas Conditioning Oven for moisture determination.
  - One Single Yarn Testing Machine made by G. R. Smith & Co., Bradford, England.
  - One Hydraulic Cloth Strength Testing Machine for 4 inch samples. Made by G. R. Smith & Co., Bradford, England.
  - One Hand Cloth Strength Testing Machine for 1 inch samples. Made by Brown Bros., Providence, R. I.
  - One Brown & Sharpe Meter Reel.
  - One Strength Testing Machine. Made by Louis Schopper, Leipzig, Germany. Capacity 500 kilograms for test pieces 50 m. m. in width and from 100 to 400 m. m. in length. Provided with special jaws to test twine, strings, cords or fabrics.
  - One Fibre Testing Machine made by Louis Schopper. Capacity 1 gram to 1.5 kilogram. Provided with jaws to test fibres or fine yarns.
  - One Yarn Strength Testing Machine made by Louis Schopper. Capacity 1000 grams to 5000 grams. Length of test pieces 200 m. m. to 1000 m. m.
  - One Yarn Strength Testing Machine made by Louis Schopper. Capacity 5 kilograms to 30 kilograms. Test pieces 500 m. m.
  - One Hygrometer Dr. Koppe's System.
  - One Accurate Tread or Pick Counter.
  - One Universal Quadrant Scales for determining counts of yarn by the various yarn systems in use.
- These last three pieces of apparatus are also made by Louis Schopper, Leipzig, Germany.
- One Lowinsson's Thread Micrometer, Charles Lowinsson, N. Y. City.
- The laboratory has been constructed to give plenty of light. The temperature and humidity of the room is controlled by the Automatic Humidity and Temperature Regulator made by the American Moistening Company of Boston, Mass.

#### *Yarn Weighing and Testing*

From Lowell Scale Company:

- One Large Platform Scale.

From Howe Scale Company:

- One Dram Scale.

- One Gram Scale.

- One Ounce Scale.

- One Pound and Ounce Scale.

Two Yarn Reels.

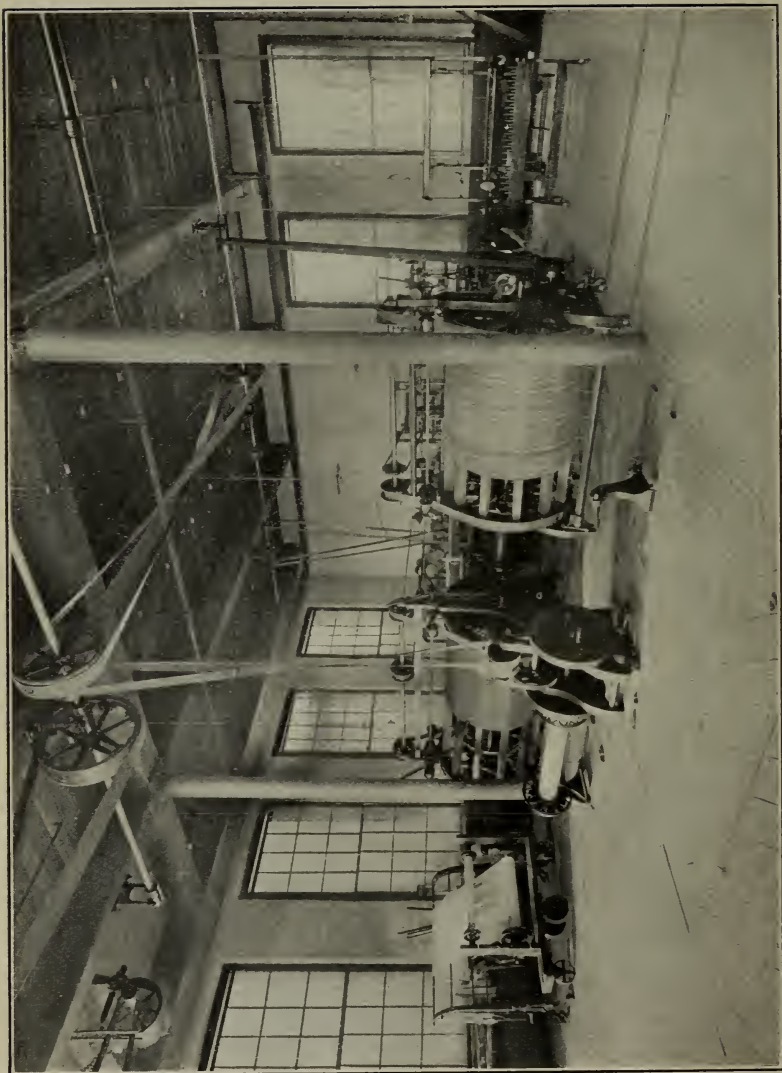
One Roving Reel.

Three Grain Scales.

One Run Beam.

One Hand Yarn Strength Tester.

Two Twist Counters.



WOOLEN AND WORSTED WARP PREPARATION



Two Barbour Knotters.

Complete Set of Roving Cans from the Laminar Fibre Co., North Cambridge, Mass.

## DESIGN AND POWER WEAVING DEPARTMENT

### *Design Department*

One Christian Becker Balance.

One Bausch & Lomb Balance.

One Twist Tester—James H. Heal, Halifax, England.

One Microscope—Bausch & Lomb.

One Reel—Brown & Sharpe Mfg. Co., Providence.

One Pick Counter—Chas. Lowinson, N. Y.

One Torsion Calculation Balance, Torsion Balance Co., N. Y.

One Grain Roving Scales, Brown & Sharpe, Providence.

One Gramme Roving Scale, Brown & Sharpe, Providence.

Miscellaneous dies for cutting accurately standard sizes of cloth.

### *Cotton Warp Preparation*

One Spooler, Saco-Lowell Shops, Lowell, Mass.

One Warper, Saco-Lowell Shops, Lowell, Mass.

One Slasher, Saco-Lowell Shops, Lowell, Mass.

One Beamer, T. C. Entwistle Co., Lowell, Mass.

One Winder, Altemus & Co., Philadelphia, Pa.

One 400 End Improved Draper Warper, Draper Co., Hopedale, Mass.

Drawing-in Frames, etc.

One Pat. Slasher Press Roll, J. Battles & Co., Lawrence, Mass.

One Pat. Expansion Comb for Warper, T. C. Entwistle Co., Lowell, Mass.

One Quiller, Johnson & Bassett, Worcester, Mass.

Set of six in. spools for Warper, Macrodi Fibre Co., Woonsocket, R. I.

One Universal Winder for Cop and Bobbin winding, Universal Winder Co., Boston, Mass. This is driven by a 1-8 h. p. 220 volt direct current motor made by Holtzer-Cabot Electric Co.

### *Woolen and Worsted Warp Preparation*

Two 40 End Jack Spoolers.

Two Spool Racks for 12 spools each.

One Pattern Dry Frame Dresser.

One Pipe and Cylinder Dresser.

One 60 inch Reel.

One 82 inch Reel.

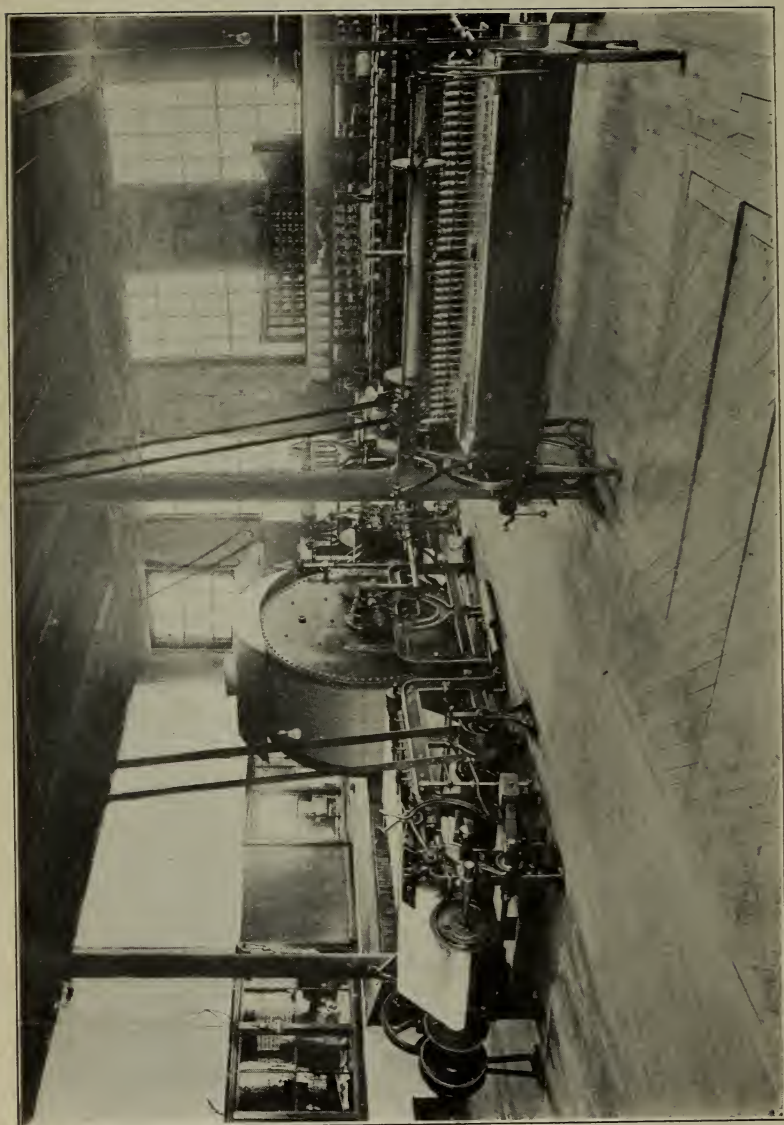
One Double Head Beamer.

All made by the Davis & Furber Machine Co., North Andover, Mass.

### *Braiding Machinery*

One 24 Line Hercules Braider.

One 12 Line Braider.



COTTON WARP PREPARATION



One Tubular Braider.  
One Sautach Braider.  
All made by the New England Butt Co., Providence, R. I.

### *Silk Preparing Machinery*

One Winder, Atwood Machine Co., Stonington, Conn.  
One Ribbon Quiller, Atwood Machine Co., Stonington, Conn.  
One Warper and Beamer, Swiss Style, Atwood Machine Co., Stonington, Conn.  
One Double Frame, Atwood Machine Co., Stonington, Conn.  
The power for the warp preparing section is supplied through a 7½ h. p. 220 volt General Electric Co. motor.

### *Plain Looms*

One Plain Northrup Loom, Draper Co., Hopedale, Mass.  
One Plain Print Cloth Loom, Whitin Machine Works, Whitinsville, Mass. To this is attached a Kip-Armstrong Warp Electric Stop Motion.  
One Plain Print Cloth Loom, Mason Machine Works, Taunton, Mass.  
One Kilburn & Lincoln Plain Loom.  
Eight Saco-Lowell Shops Plain Looms.  
One English Loom, Hattersley.  
One Improved Northrup Loom, fine sateen, Draper Company, Hopedale, Mass.  
One Eight Harness Corduroy Loom, Draper Company, Hopedale, Mass.  
One Side Cam Twill Loom, Whitin Machine Works, Whitinsville, Mass.  
One Five Harness Sateen Loom, Saco-Lowell Shops, Lowell, Mass.  
One Harriman Automatic Shuttle Changing Loom.  
One Lewiston Machine Co. Loom, 4 harness, side cam.  
One Crompton Jean Loom.  
Four of the above looms are equipped with Abbott cleavers made by The Abbott Wire and Cast Steel Warping Cleaving Co., Lisbon Falls, Me.

### *Fancy Looms*

One Northrup Loom with dobby, Draper Co., Hopedale, Mass.  
One Lewiston Machine Company Bag Loom.  
One Knowles Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.  
One Crompton Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.  
One Crompton Towel Loom, 2 x 1 boxes, Crompton-Knowles Loom Works.  
One Crompton Lappet Loom, with 16 harness dobby, Crompton-Knowles Loom Works.

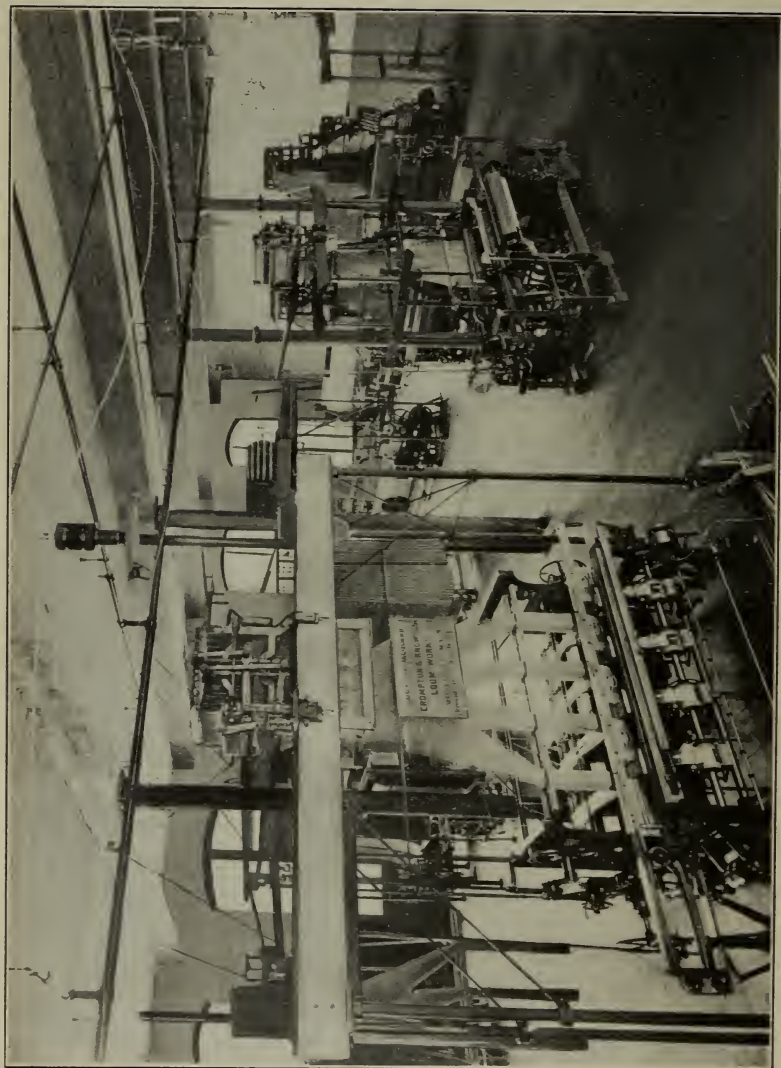


WEAVE ROOM

- One Knowles Fancy Cotton Loom, 20 harness dobby, 4 x 1 boxes, for fancy leno work, Crompton-Knowles Loom Works.
- One Knowles Fancy Cotton Loom, 25 harness dobby, Crompton-Knowles Loom Works.
- One Crompton Fancy Cotton Loom, single cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Knowles Gem Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Worsted Loom, 24 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Fancy Loom, 6 x 1 double cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Twenty Harness Dobby Loom, Whitin Machine Works, Whitinsville, Mass.
- One Crompton & Knowles Heavy Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Knowles Blanket Loom, 25 harness dobby, 4 x 1 boxes, Crompton-Knowles Loom Works.
- One Knowles Worsted Loom, 32 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Knowles Heavy Woolen Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Crompton & Knowles Intermediate Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works. One of these looms is operated by a direct connected  $\frac{3}{4}$  h. p. 220 volt 3 phase 60 cycle General Electric motor.
- One Model Dobby Attachment.
- One Stafford Ideal Loom, 16 harness, automatic shuttle changing device. Stafford Loom Co., Readville, Mass.

#### *Jacquard Looms*

- One Knowles Fancy Loom, single lift Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, double lift Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, Jacquard tied up for leno, Crompton-Knowles Loom Works.
- One Knowles Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Knowles Loom, 4 x 4 boxes, 54 inch, with 600 hook double lift double cylinder McMurdo Jacquard Head. Tied up for damask napkin designs.
- One Crompton Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Stafford Silk Loom, 1200 hook Halton Jacquard.
- One Crompton & Knowles 72 in. Tapestry Loom with 2600 hook Halton Jacquard Head.



WEAVE ROOM, JACQUARD SECTION



- One 400 hook single lift, Schaum & Uhlinger Jacquard mounted for 4 bank narrow fabric loom. This loom is driven by a direct connected  $\frac{1}{2}$  h. p. 220 volt 60 cycle Westinghouse motor.
- One 840 hook double lift, single cylinder Jacquard on Crompton-Knowles 4 bank ribbon loom.
- One 800 hook, double lift Knowles Gem Silk Brocade Jacquard Machine, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Felix Tonnar German Plush Loom with 400 hook Crompton-Knowles Jacquard Head.
- One Skinner Brussels Carpet Loom Three-quarters wide equipped with 1280 hook Jacquard head. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### *Card Cutting Machines*

- One Jacquard Fine Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### **Hand Loom Weaving**

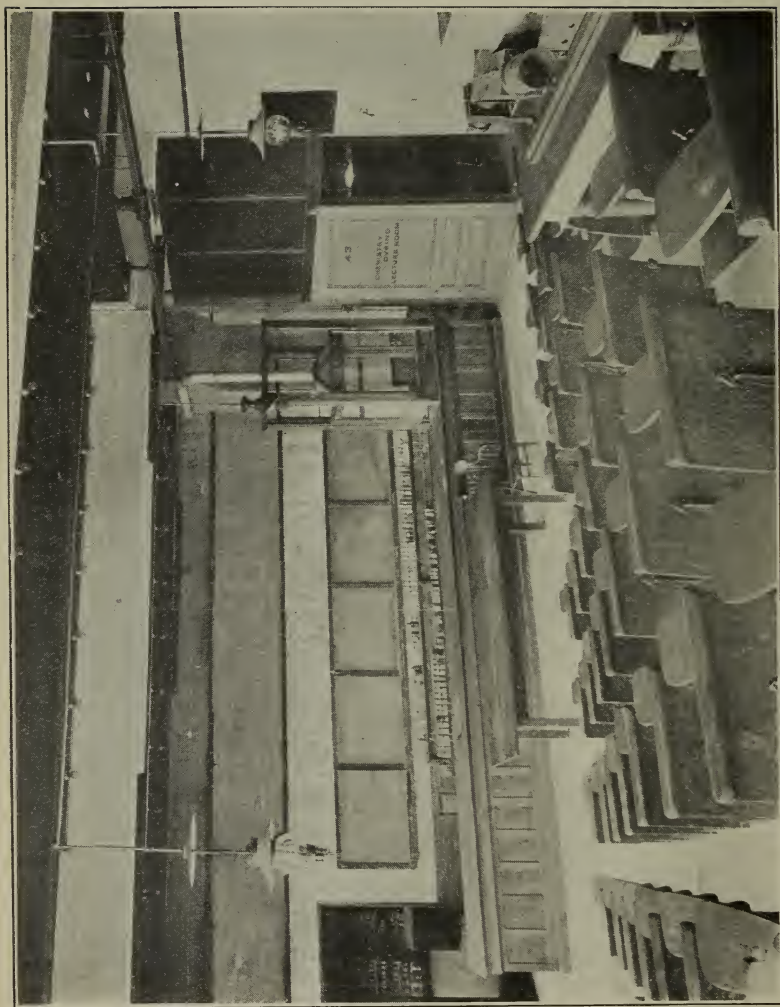
- Twelve Hand Looms, 3 x 3 boxes, 20 harness dobby.
- Eight Hand Looms, 4 x 4 boxes, 24 harness dobby.
- Eight Hand Looms, 3 x 3 boxes, 32 harness dobby.
- Six Hand Looms, 4 x 4 boxes, 30 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 32 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 600 hook Jacquard.
- One Hand Loom, 48 harness.
- Two Hand Looms with treadles.
- Pattern Warping Stands.
- Beaming, drawing-in stands, etc.

### **CHEMISTRY AND DYEING DEPARTMENT**

#### *Chemical Laboratories*

- The General Chemistry and Qualitative Analysis Laboratory includes:
  - One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in Chemistry; also gas and water fittings, reagents and sinks.
  - Four Large Double Hoods.
  - Two Steam Paths.
  - Two Parson's Automatic Gas Generators.





CHEMISTRY LECTURE ROOM

### *Quantitative Laboratory*

- One Water Distilling Apparatus.
- One Steam Drying Closet and Several Drying Ovens.
- One Large Steam Bath.
- One Electrolytic Table.
- Five Hoods.
- Fifty laboratory desks, each fully provided with apparatus.

### *Balance Room*

- One Large Christian Becker Analytical Balance.
- Seven Small Christian Becker Analytical Balances.
- One Standing Analytical Balance.
- One Eimer & Amend Analytical Balance.
- One H. L. Becker's Sons & Co. Analytical Balance.

### *Combustion Room*

- One Combustion Furnace, 25 burners.
- One Lothar Meyer's Furnace for tubes.
- One Kerosene Burner Muffle Furnace.

### *Microscopic and Colorimetric Laboratory*

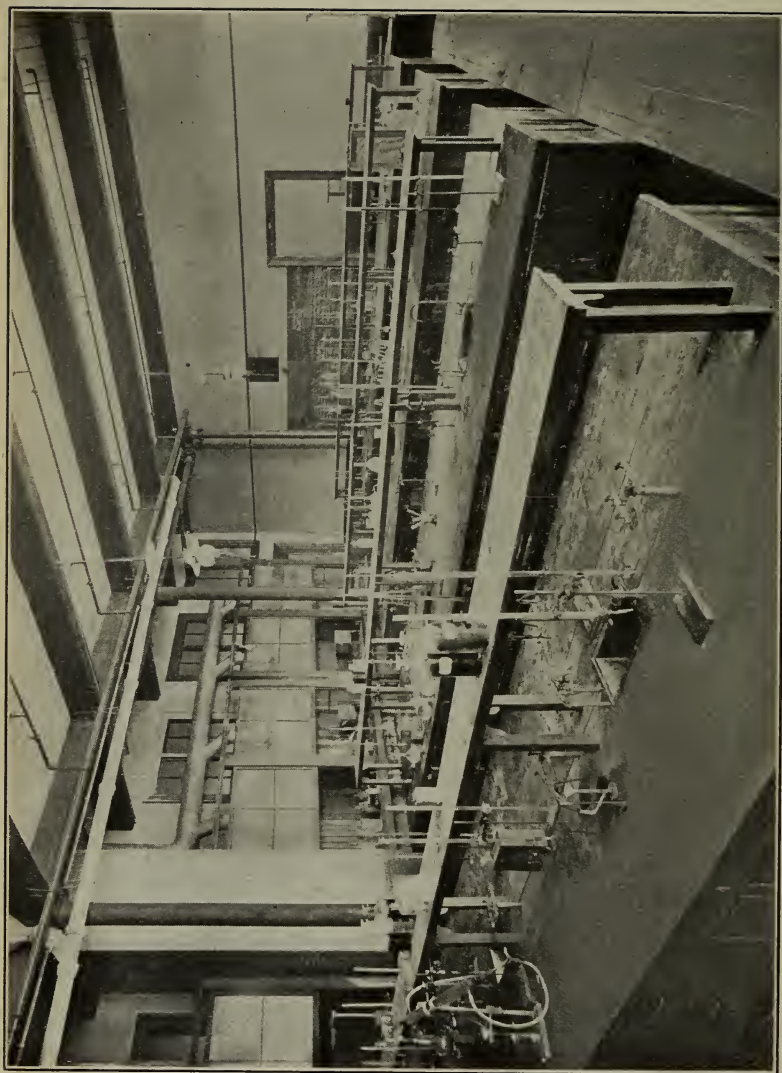
- Two benches for microscopical work.
- Three Bausch & Lomb Compound Microscopes.
- One Nachet et Fils Compound Microscope.
- One Tintometer.
- One Ives Colorimeter.
- One Polariscope made by Franz Schmidt & Haensch, Berlin, Germany.
- One Spectroscope made by John Browning, London, England.
- Desks and shelves for the apparatus and reagents necessary for this branch of the work.
- Adjoining this Laboratory is a dark room for Spectrum Analysis, Photometric Work, etc.

### *Assistant Instructor's Laboratory*

- One Large Case of Chemicals.
- One Double Hood.
- One Copper Water Bath.
- One Soapstone Sink with a drain board.
- Benches, desks and complete fittings for water, gas and suction.

### *Private Laboratory*

- One Groemner Balance.
- One Large B. & L. Microscope.
- One Case for Chemicals and Apparatus.
- Three Laboratory Benches, with necessary fittings.
- One Large Hood.
- One Steam Bath.
- One Experimental Dye Apparatus.
- One Porcelain Sink and Drain Board.



QUANTITATIVE LABORATORY

### *Chemical Lecture Room*

Is provided with a lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.

An electric arc reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats are provided for eighty students, and are arranged on a raised floor so that every student has a full view of the lecture table.

This room contains various collections of dyestuffs and chemicals for exhibition and for lecture demonstration.

### *Experimental Dyeing Laboratory*

The dyeing laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

One Small Hydro-Extractor, from W. H. Tolhurst & Son, Troy, N. Y.

Driven by a 3 h. p. Holtzer-Cabot Electric Co.'s motor.

Twenty-four Steam Jacketed Experimental Dyeing Machines.

Thirty Steam Coil Experimental Dyeing Machines.

One Drying Chamber.

One Ageing Chamber.

### *Experimental Printing Laboratory*

One Calico Printing Machine, made by Mather & Platt, Manchester, England.

One Iron Jacketed Steaming Chamber from A. Edmeston & Son, Patricroft, England.

One set of Steam Jacketed Copper Kettles.

### *Fuel and Oil Analysis Laboratory*

Mather Bomb Calorimeter, with complete outfit.

Emerson Bomb Calorimeter, with complete outfit.

Parr Calorimeter.

Abbe Refractometer.

Torsion Viscosimeter.

Tagliabue Viscosimeter.

Tagliabue Cold Test Apparatus.

Pensky Martin Oil Tester.

N. Y. State Oil Tester.

Sartorius Specific Gravity Balance.

Two Becker Analytical Balances.

Gas Muffle Furnace.

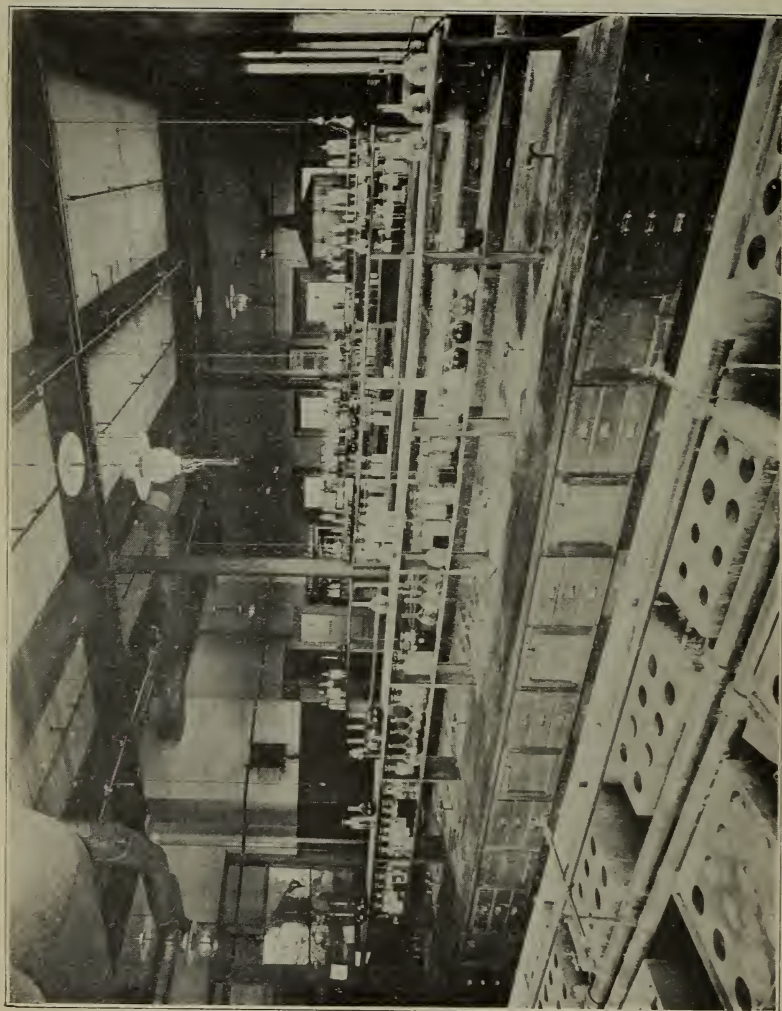
Kny Scherer Oil Tester.

Graefe Gas Calorimeter.

Orsat Gas Analysis Apparatus.

Laboratory Tables, Lockers and Hoods.





EXPERIMENTAL DYEING LABORATORY



### *Industrial Chemistry Laboratory*

One Filter Press, Type E, T. Shriver and Co.  
One Single Acting Triplex Plunger Pump, Gould's Mfg. Co.  
One Vacuum Drying Apparatus, Norman Hubbard's Sons.  
One Surface Condenser, Norman Hubbard's Sons.  
One Packard Vacuum Pump, Norman Hubbard's Sons.  
One Vacuum Evaporator, Swenson System, American Foundry and Machine Co.  
One Centrifugal, C. H. Chavant and Co.  
One Double Jar Mill, F. I. Stokes and Co.  
One Sturtevant Ore Crusher.  
One Sturtevant Pulverizer.  
Ten Copper Steam Baths, D. H. Wilson and Co.  
One 36 in. Ventilating Fan, Mass. Fan Co.  
One Autoclave.  
Lockers and Tables.  
Power for this department is furnished through a 7½ h. p. 220 volt General Electric Co.'s motor.

### *Commercial Dyeing Laboratory*

One Kier, Atlantic Work, East Boston, Mass.  
One small Kier, fitted with E. D. Jefferson's circulating device.  
One Electrolyzer for manufacturing bleaching solutions, The National Laundry Machine Co., Dayton, Ohio.  
One Permutit Filter. The Permutit Co., New York City.  
One Mercerizing Machine.  
One Raw Stock Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.  
One Yarn Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.  
One Jig Dyeing Machine, The Textile-Finishing Machinery Co., Providence, R. I.  
One set of Drying Cans, The Textile-Finishing Machinery Co., Providence, R. I.  
One Chain Dyeing Machine, T. C. Entwistle Co., Lowell, Mass.  
One Raw Stock Drying Table, Philadelphia Textile Machinery Co., Philadelphia, Pa.  
One Padding Machine, Arlington Machine Works, Arlington, Mass.  
One Hydro-Extractor, W. H. Tolhurst & Son, Troy, N. Y.  
One Experimental Dyeing Machine, The Psarski Dyeing Machine Company, Cleveland, Ohio.  
One Experimental Dyeing Machine, Hussong Dyeing Machine Co., Croweville, N. J.  
One Sample Piece Dyeing Machine, Rodney Hunt Co., Orange, Mass.  
Seven Dye Tubs.  
One Power Yarn Reel.



INDUSTRIAL CHEMISTRY LABORATORY

One Reeves' Variable Speed Device.

Two Trucks.

The power for this department is supplied through a 15 h. p. 220 volt Allis-Chalmers Co.'s motor.

## FINISHING DEPARTMENT

### Woolen and Worsted

One 2 string Washer, Rodney Hunt Co., Orange, Mass.

One Fulling Mill, Rodney Hunt Co., Orange, Mass.

One Sample Fulling Mill, James Hunter & Co., North Adams, Mass.

One Up and Down Dry Gig, Curtis & Marble, Worcester, Mass.

One Rolling and Stretching Machine, Curtis & Marble, Worcester, Mass.

One Up and Down Wet Gig, Curtis & Marble, Worcester, Mass.

One Steam Finishing Machine, Curtis & Marble, Worcester, Mass.

One 60 in. 3 burner Singeing Machine, adapted for Cotton, Silk or Worsted Goods, Curtis & Marble, Worcester, Mass.

One Two Cylinder Double Acting Brushing Machine, Curtis & Marble, Worcester, Mass.

One 60 in. 4 Cylinder Sanding and Polishing Machine, Curtis & Marble, Worcester, Mass.

One Kicker Mill, James Hunter & Co., North Adams, Mass.

One 6-4 Double Shear, Parks & Woolson, Springfield, Vt.

One Single Shear, Curtis & Marble. Donated by Mass. Mohair Plush Co., Lowell, Mass.

One Dewing Machine, G. W. Voelker & Co., Woonsocket, R. I.

One 6-4 Voelker Rotary Press, G. W. Voelker & Co., Woonsocket, R. I.

One Tentering and Drying Machine, John Heathcote, Providence, R. I.

One Single Crabbing Machine, H. W. Butterworth & Son, Philadelphia, Pa.

One 72 in. Woolen Napper, Davis & Furber, North Andover, Mass.

One 32 in. Basket Hydro-Extractor, W. H. Tolhurst, Troy, N. Y.

One A. W. C. Measuring and Weighing Machine, Parks & Woolson, Springfield, Vt.

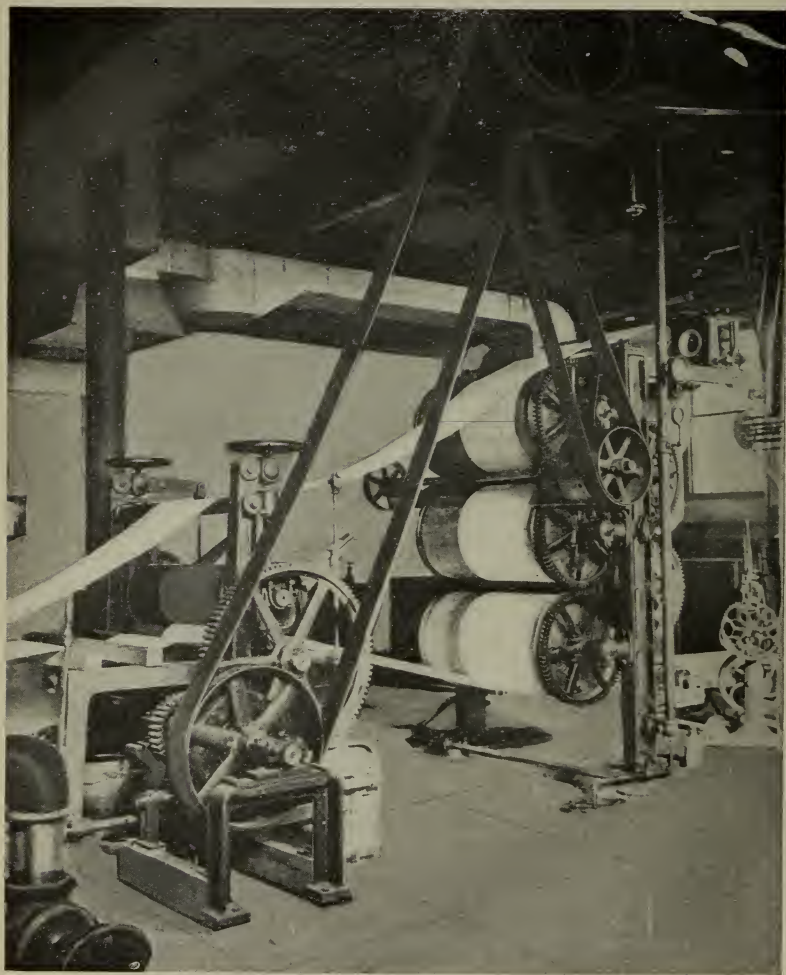
One Lintz & Eckhardt Cloth Numbering Machine, Improved by Durbrow & Hearne Mfg. Co., New York.

One Steam Press for Underwear, United States Hoffman Co., Syracuse, N. Y.

One Sewing Machine, Birch Brothers, Somerville, Mass.

Soap tanks, perch, burling and measuring tables.

The power for this department is supplied through a 15 h. p. 220 volt Allis-Chalmers motor.

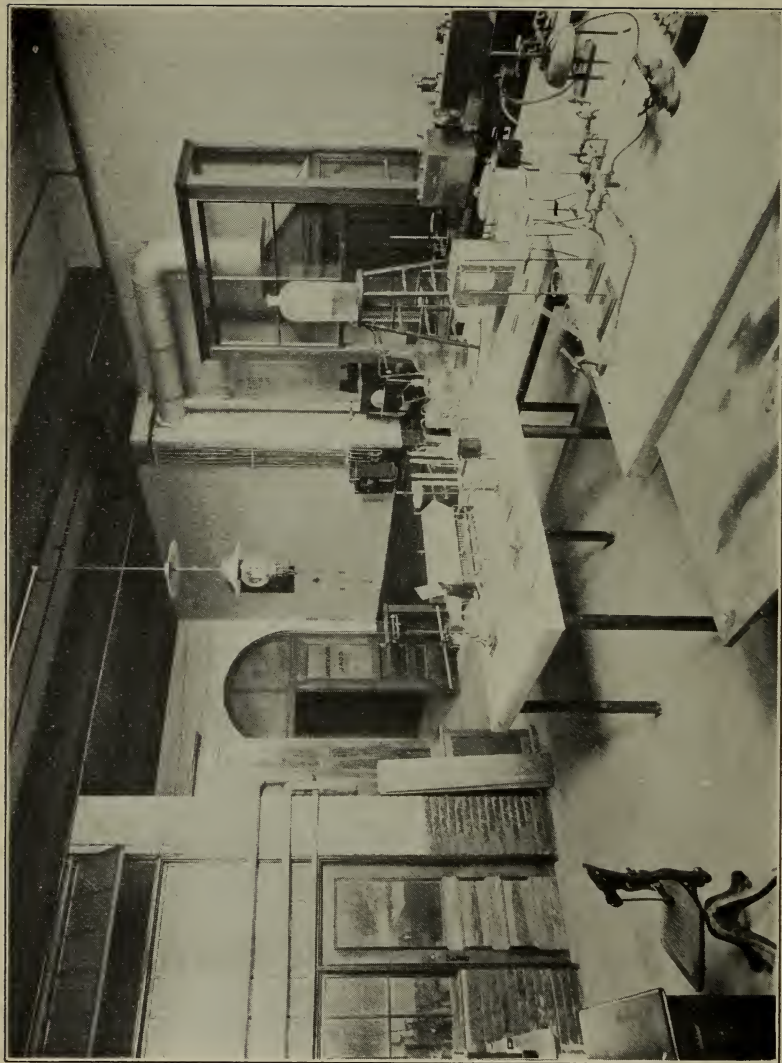


VIEW IN. COMMERCIAL DYEING LABORATORY

### Cotton Finishing Machinery

- One 40 in. Inspecting and Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 44 in. No. 25 Railway Sewing and Rolling Machine, Curtis & Marble, Worcester, Mass.
- One 44 in. Cotton Shearing Machine, Type No. 34, Curtis & Marble, Worcester, Mass.
- One 44 in. No. 3 Steam Calender Rolling Machine, Curtis & Marble, Worcester, Mass.
- One 40 in. Cloth Folder, Curtis & Marble, Worcester, Mass.
- One 40 in. Winder and Measurer, Curtis & Marble, Worcester, Mass.
- One set 44 in. Shear Blades for grinding purposes, Curtis & Marble, Worcester, Mass.
- One 48 in. No. 4 Opening, Sewing and Re-rolling Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One No. 1 Hand Power Portable Railway Sewing Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One 40 in. 3 Roll Water Mangle, with husk and brass rolls and usual attachments, The Textile-Finishing Machinery Co., Providence, R. I.
- One 48 in. Mycock Scutcher, for the Water Mangle, Thos. Leyland & Co., 60 India St., Boston, Mass.
- One 40 in. Mycock Cloth Expander, for the Water Mangle, Thos. Leyland & Co., 60 India St., Boston, Mass.
- One 40 in. 2 Roll Starch Mangle, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Upright Drying Machine with 10 copper cylinders, The Textile-Finishing Machinery Co., Providence, R. I.
- One 16 x 24 in. Bronze Covered Stretcher, for the Drying Cans, C. A. Luther & Co., Providence, R. I.
- One 40 in. double Bristle Stretcher, for Drying Cans, American Finishing Machinery Co., 141 Milk St., Boston, Mass.
- One 40 in. Sprinkler, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. 5 Roll Universal Calender, with chasing attachment, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Mycock Cloth Expander, for the calender, Thos. Leyland & Co., 60 India St., Boston, Mass.
- One 40 in. Tommy Dodd Starch Mangle, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- One Direct Driven 44 in. - 50 ft. - 0 in. Vibratory Tenterring Machine, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- This machine is driven separately by a 7½ h. p. variable speed 220 volt direct current General Electric Co.'s motor.
- The power for the rest of the department is supplied through a 25 h. p. 220 volt Westinghouse direct current motor.





FUEL AND OIL LABORATORY

## ENGINEERING DEPARTMENT

### STEAM ENGINEERING LABORATORY

The engineering laboratory contains the following equipment:

- 50 H. P. Allis-Chalmers Corliss Steam Engine (Reliance type) for experimental purposes arranged to operate condensing or non-condensing and direct connected to an Alden absorption dynamometer.

Wheeler Surface Condenser (200 sq. ft. surface) with 5 in. x 6 in. x 6 in. x 7 in. combined air and circulating pump.

- 25 K. W. Kerr Steam Turbine (7 stage) direct connected to 25 K. W. Richmond Electric Co. alternating current generator and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low pressure turbine in conjunction with the Allis Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.

5000 gallon Pressure Tank for heads up to 300 ft. and connections for experimental work.

Two 2500 gallon Concrete Storage Tanks.

Complete set of Weighing and Suction Tanks on Fairbanks Standard scales.

Deane Triplex Power Pump 4 in. x 6 in.

One Hays Flue Gas Collector and Instruments for determination of  $\text{CO}_2$  and  $\text{CO}$ .

One Throttling Calorimeter.

One Separating Calorimeter.

Schaeffer & Budenberg Mfg. Co.

One 2 in. Centrifugal Pump made by Lawrence Machine Co. and direct connected to a 3 H. P. General Electric Co. 220 volt induction motor.

Miscellaneous equipment of Pressure, Vacuum and Draft Gages, Thermometers, etc.

Clayton Air Compressor (belted type) 6 in. x 6 in.

Centrifugal Pump, 2 inch (belted type), Lawrence Machine Company, Lawrence, Mass.

Two Sturtevant Fan Blowers for experimental work.

Metropolitan Injector. 3-4 inch.

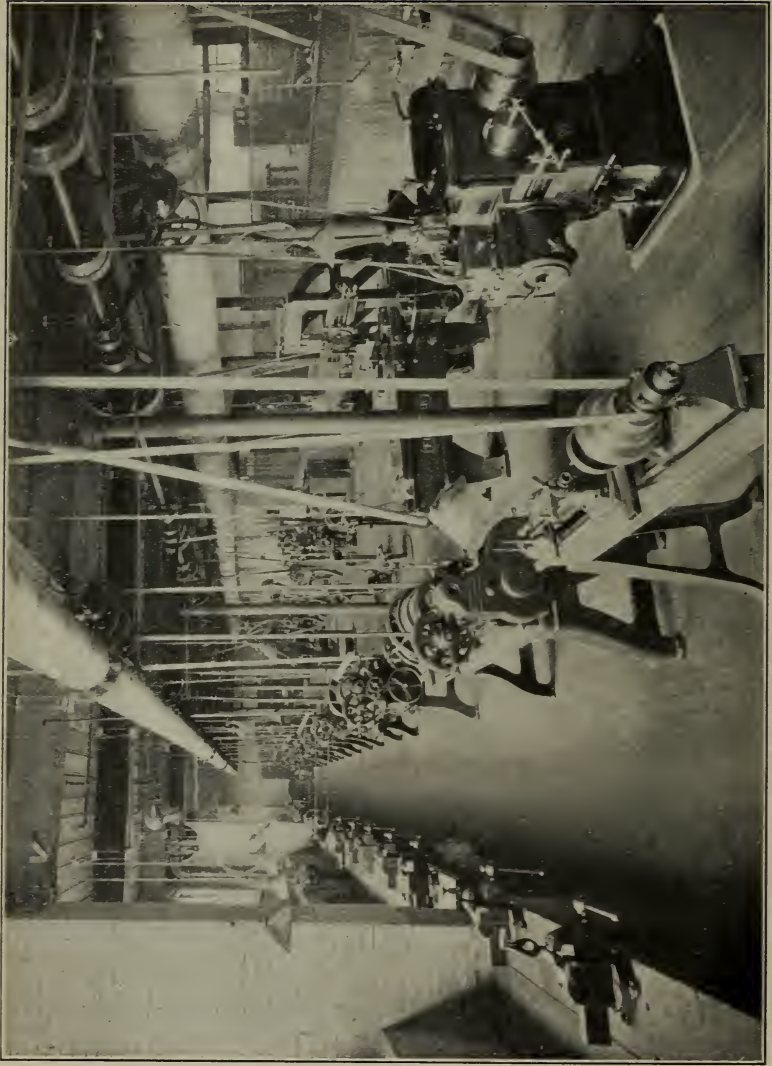
Differential Transmission Dynamometer.

Variable Speed Transmission.

One dead weight tester for calibrating pressure gages.

One vacuum pump and mercury column for calibrating vacuum gages.

Two Steam Engine Indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types).



MACHINE SHOP

One Gas Engine Indicator. Speed Counters and Trachometers. Apparatus for investigating the rate of heat transmission for steam heating coils and condenser tubes.

All steam supplied to the laboratory passes through a 4 inch horizontal Cochrane steam separator to insure dry steam for experimental work.

Buff & Buff Engineers Transit.

Philadelphia Level Rod.

Apparatus for testing friction and slip of belts and pulleys.

#### ELECTRICAL ENGINEERING LABORATORY

Standard Marine Finished Slate Switchboard made up of:

One Westinghouse A. C. Generator Panel 25 K. W.

One Westinghouse A. C. Generator Panel 15 K. W.

One Circuit Panel for lights and motors.

One 15 K. V. A. 220 Volt 3-Phase 60 Cycle Synchronous Motor.

One 10 H. P. 220 Volt D. C. Allis-Chalmers Co. Motor.

One 10 H. P. 220 Volt D. C. General Electric Co. compound wound motor.

One 7.5 H. P. 220 Volt 3-Phase 60 Cycle General Electric Induction Motor.

One 10 H. P. 220 volt 3-Phase Induction Motor, General Electric Company.

One 4 H. P. General Electric Dynamometer which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220 Volt 60 cycle 3-phase on one side and delivers or receives 220 Volt direct current.

One 5 K. W. 220 Volt 440 Volt Transformer.

Westinghouse Portable Polyphase Wattmeter with current transformers.

Three General Electric A. C. Wattmeters.

Two General Electric A. C. Ammeters.

One General Electric A. C. Voltmeter.

Two 250 Volt D. C. Weston Portable Voltmeters.

One Weston D. C. Portable Millivoltmeter. 2 ampere and 20 ampere shunts for use with the above instrument.

One 150 amp. D. C. Weston Portable Ammeter.

Two Weston Model 45 D. C. Ammeters.

Two Weston Model 260 D. C. Ammeters.

One Weston Model 260 D. C. Voltmeter.

One Thompson 50 ampere 2 wire 220 volt recording Wattmeter, General Electric Co.

One Weston Laboratory Standard Voltmeter with multiplier to 600 volts.

One Small Wheatstone Bridge with D'Arsonval Wall Galvanometer.

One Simple Galvanometer.





MECHANICAL DRAWING ROOM

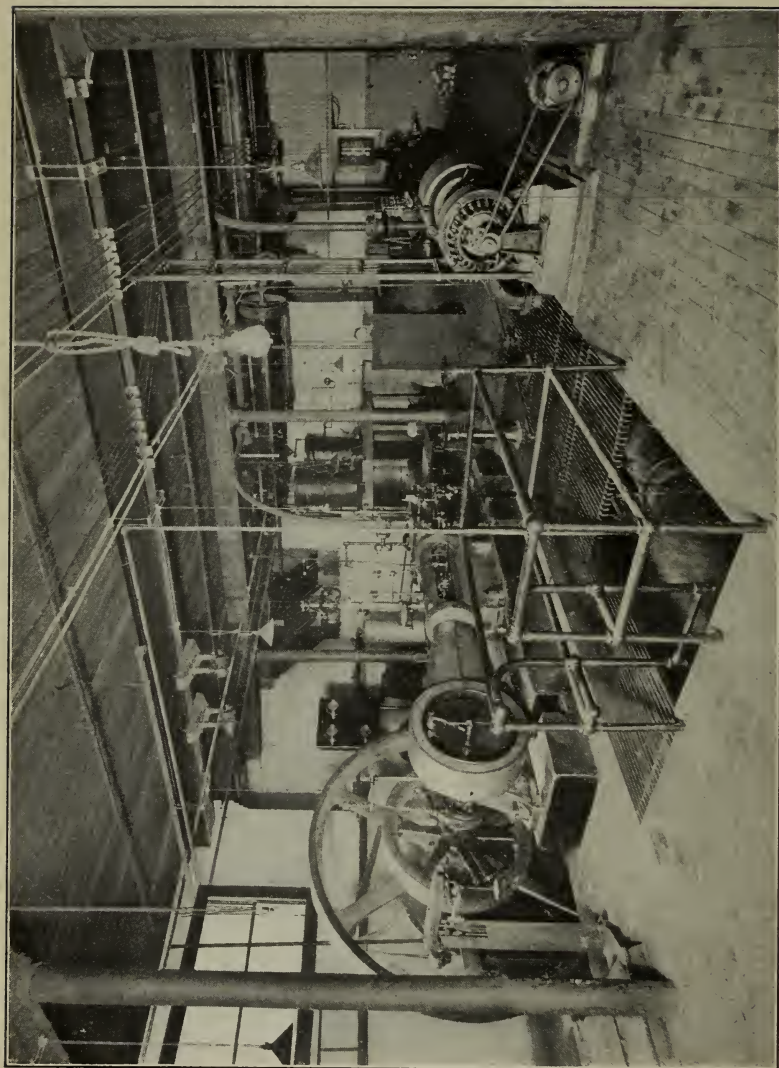


One Leeds & Northrup Potentiometer No. 7551.  
 One Wall Galvanometer L. & N. 2210 D'Arsonval type.  
 One Wheatstone Bridge L. & N. No. 4725 A. with D'Arsonval Galvanometer L. & N. tripod type.  
 One Slide Wire Bridge, Leeds and Northrup.  
 One Portable Galvanometer No. 2323, Leeds & Northrup.  
 One Ohmmeter, Leeds & Northrup.  
 One Electro-Dynamometer, Leeds & Northrup.  
 One Weston Standard Cell.  
 Two Tachometers.  
 One Potential Phase Shifter made by States Co., Hartford, Conn.  
 One Standard Leeds & Northrup Photometer with Lummer-Brodhun Screen Compound Rotator and Rotating Sector, Screens, etc.  
 One Esterline Portable Curve Drawing Wattmeter designed for Polyphase A. C. or Direct Current power measurements. Mechanism to vary speed of paper.  
 Two Hand Feed Arc Lamps for stereopticons.  
 Resistance boxes of various sizes and other apparatus necessary for commercial testing of lamps, motors, etc.  
 Two cell storage battery for constant voltage current supply.  
 An Exhibition Board containing samples of the Chloride and Exide Storage Battery Plates donated by the Electric Storage Battery Co. of Philadelphia.  
 Miscellaneous apparatus for experiments in Mechanics, Heat, Light, Sound and Electricity.

### Machine Shop

The equipment of the machine shop is as follows:

Four Standard Engine Lathes, 13 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.  
 Three Standard Engine Lathes, 14 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.  
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from F. E. Reed Co., Worcester, Mass.  
 One Engine Lathe, 18 inch swing, 10 ft. bed, from Flather & Co., Nashua, N. H.  
 One Engine Lathe, 18 inch swing, 6 ft. bed, from Champion Tool Works, Cincinnati, Ohio.  
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from S. H. Putnam Sons, Fitchburg, Mass.  
 Five Speed Lathes, 17 inch swing, 5 ft. bed, from J. G. Blount, Everett, Mass.  
 One No. 1 Universal Milling Machine, with all three feeds automatic, from Kempsmith Mfg. Co., Milwaukee, Wis.  
 One 24 in. x 24 in. 6 ft. Planer, from the Mark Flather Planer Co., Nashua, N. H.



ENGINEERING LABORATORY

- One 23 inch Upright Drill with back gears and power feed, from J. E. Snyder & Son, Worcester, Mass.
  - One 14 inch Single Sensitive Drill from the Stanley Mfg. Co., Lawrence, Mass.
  - One No. 1 Universal Grinder from Landis Tool Co., Waynesboro, Penn.
  - One 20 inch Wet Tool Grinder from J. G. Blount, Everett, Mass.
  - One 12 inch, Two Wheel, Dry Grinder from J. G. Blount, Everett, Mass.
  - One American Twist Drill Grinder from the Heald Machine Co., Worcester, Mass.
  - One Type 1 B Portable Electric Grinder from the Cincinnati Elec. Tool Co., Cincinnati, Ohio.
  - One 30 inch Grindstone and Frame from the Athol Machine Co., Athol, Mass.
  - One Single Spindle Centering Machine from D. E. Whiton Machine Co., New London, Conn.
  - One 15 inch Shaper from Potter & Johnson, Pawtucket, R. I.
  - One Power Hack Saw from the Fairbanks Co., Boston, Mass.
  - One Cold Saw from John T. Burr & Son, Brooklyn, N. Y.
  - Two Blacksmith Forges, Anvils and Tools are also provided.
  - One Gas Oven for hardening and tempering tools.
  - One Eureka Metal Power Saw. Manning, Maxwell & Moore.
  - One Type "C C" Electric Drill. Cincinnati Electrical Tool Co.
  - One Universal Milling Attachment for Kempsmith Milling Machine, Taylor Machinery Co.
  - One Hisey Type "B"  $\frac{1}{2}$  H. P. Tool Post Grinder. Taylor Machinery Co.
  - One No. 2 Cory Bench Straightener. Manning, Maxwell & Moore.
  - One No. 3 Universal Cutter and Reamer Grinding Machine. Brown and Sharpe.
- These tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.
- A well equipped tool room contains a selected stock of the best makes of small tools such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc. This year there has been a substantial addition of tools which experience has found are required.
- The following wood working tools are also provided in addition to benches for pattern making:—
- One Pattern Maker's Lathe, 16 in. swing, 8 ft. bed, from Fay & Scott, Dexter, Me.
  - One 32 in. Band Saw from the Crescent Machine Co., Leetonia, Ohio.
  - One Iron Single Saw Bench, from the Crescent Machine Co., Leetonia, Ohio.
  - One Double Saw Bench.



ATHLETIC FIELD AND SCHOOL BUILDINGS



One 12 in. Buzz Planer from W. W. Carey, Lowell, Mass.

The power for this department is supplied through a 10 h. p. 220 volt direct current Allis Chalmers Co.'s motor.

#### POWER, LIGHT, HEAT AND VENTILATING PLANT

In the new Power House completed in 1913, there is located the main power generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:

One 300 H. P. Aultman and Taylor Horizontal Water Tube Boiler equipped in U. S. Rocking Grates.

One Knowles Boiler Feed Pump 6 x 4 x 6.

One Deane Boiler Feed Pump 6 x 4 x 6.

All feed water is heated and measured by 30000 lbs. Cochrane Metering Open Feed Water Heater which is provided with a Lea Recorder and a Cochrane Oil Extractor. Harrison Safety Boiler Works, Philadelphia, Pa.

In the Engine Room are located:

One Payne 14 x 14 Automatic High Speed Engine 125 H. P. Direct connected to 75 K. W. 220 Volt D. C. Bullock Generator.

One  $9\frac{1}{2}$  x  $11\frac{3}{4}$  Nash Gas Engine of 50 H. P. four cycle type, with speed regulating clutch and a "hit and miss" governor. Direct connected to a 30 K. W. 220 Volt D. C. Bullock Generator.

One Steam Driven Ingersoll-Rand 8 x 8 Air Compressor, for use with Tarbo Heads, installed in the French Spinning Department by the G. M. Parks Co., Fitchburg, Mass.

One  $5\frac{1}{2}$  x 6 Motor Driven Air Compressor with 20 cu. ft. storage tank for use in starting Nash Gas Engine.

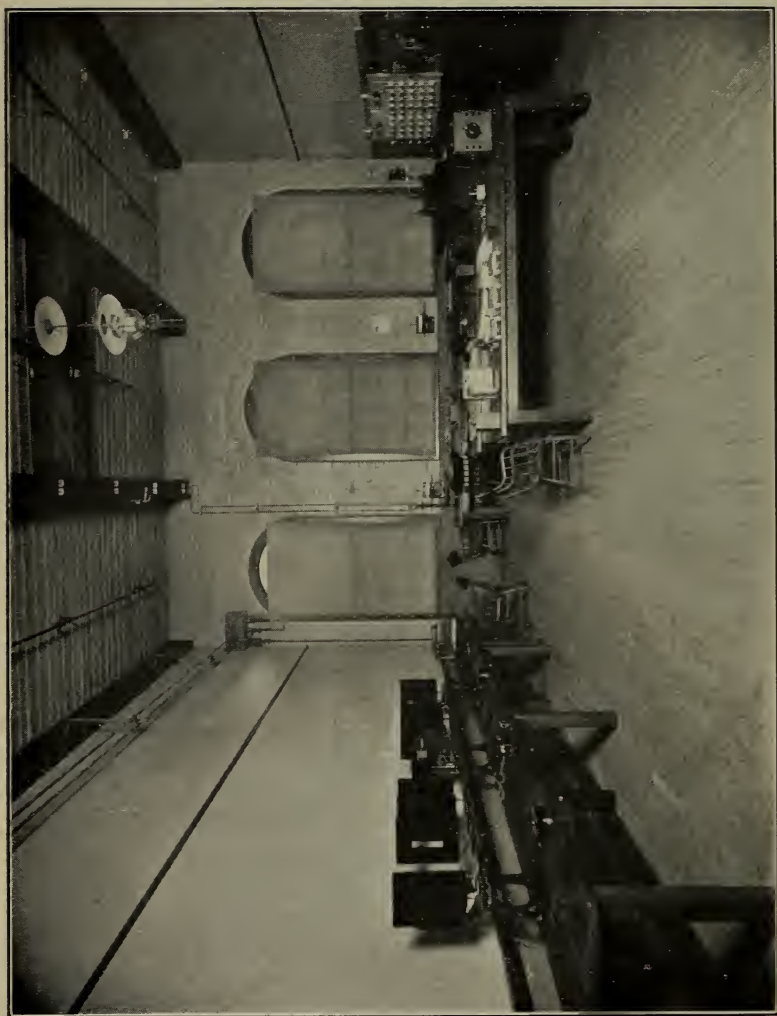
One Cross Oil Filter.

The station switchboard is of Marine Finished Slate 90 inches in height and consists of two generator panels and one circuit panel from which circuits supplying approximately 1200 - 16 candle power equivalent lamps and over 255 H. P. in motors, located in various departments of the school.

The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation and by means of the Sturtevant Double Duct Heating and Ventilating System located in the basement of Southwick Hall and by the Sturtevant Fan and Heater located in the basement of Kitson Hall. Direct driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.

The Humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles Triplex 4 x 4 power pump and tank.





ELECTRICAL MEASUREMENT LABORATORY

In the original boiler house there is retained, as an emergency unit, 2 - 100 H. P. Stirling Water Tube Boilers and a Sturtevant Induced Draft Apparatus, also a Warren Webster Feed Water Heater.

## ATHLETICS

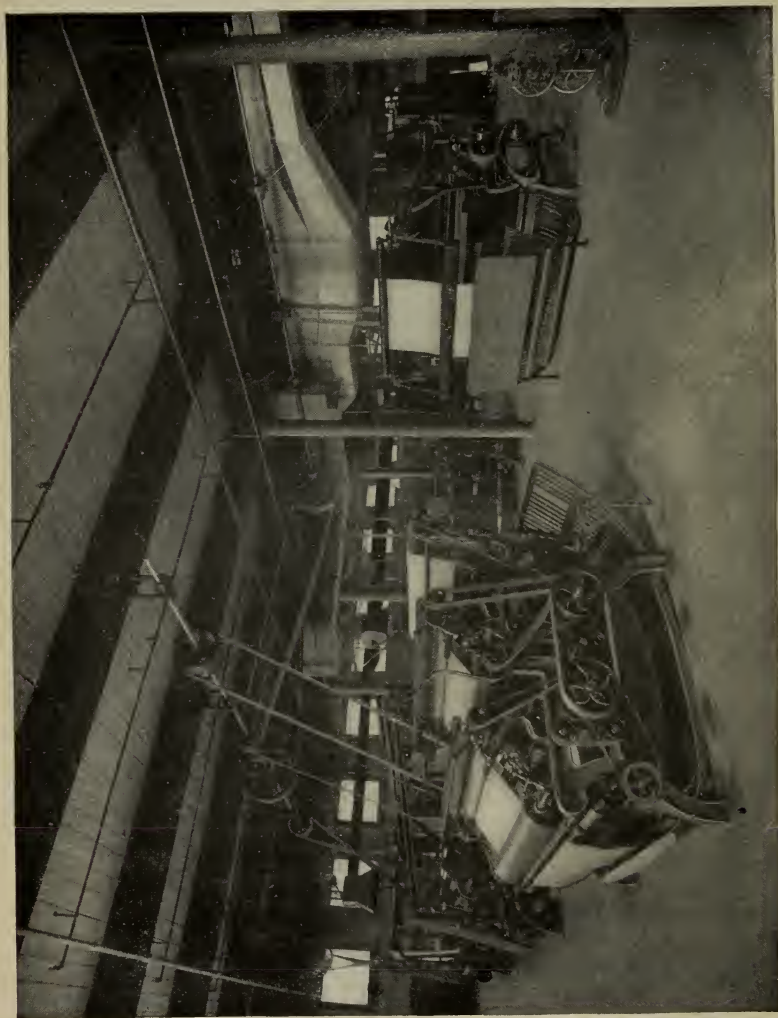
Through the generosity of Mr. Frederick Fanning Ayer, the school has been provided with a Campus and Athletic Field of about three acres. This has been carefully graded and laid out for base ball, foot ball and track athletics. Bleachers have been provided for use at the out-of-door games.

To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

In the basement of Kitson Hall there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths, lockers and toilets. Both rooms are easily accessible to the Campus by way of the outer door of Kitson Hall.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb bells, Indian clubs, a set of travelling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest; all candidates for the various athletic teams are obliged to pass a satisfactory physical examination given by the Medical Adviser of the school.



WOOLEN AND WORSTED FINISHING DEPARTMENT

# Day Classes

## ENTRANCE REQUIREMENTS

### Degree Courses

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

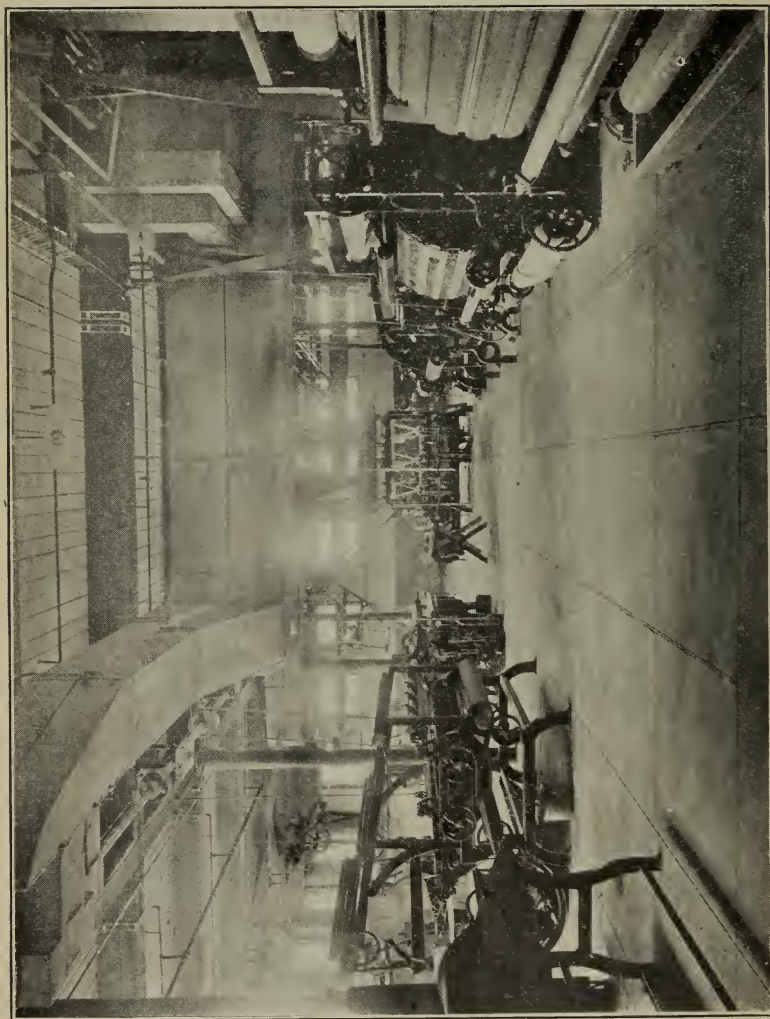
Required Subjects	POINTS
Plane Geometry	1
Algebra (I Elementary. II Advanced)	2
Elementary German A (two years) or	
Elementary French A (two years)	2
English	3
History	1
	<hr/>
	9

Elective Subjects	POINTS
Physics	1
Chemistry	1
Solid Geometry	1
Trigonometry	1
Mechanical Drawing	1
Mechanic Arts	1
History	1
Elementary French or	} Two years
Elementary German	
Advanced French or German (one year in addition to requirements of Elementary French A or Elementary German A	1
English	1

An applicant may also be admitted on the basis of entrance examinations in which case he must pass sufficient number of the required subjects to make nine points and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.





FINISHING DEPARTMENT



## Diploma Courses

Candidates for admission to the Diploma Courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four year course in a High School or Academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of Algebra, one year of Plane Geometry and three years of English. An applicant is advised to complete both Algebra I and II before entering.

The subject matter covered should be the same as described under the required subjects for the Degree Courses with the exception of German, French and Arithmetic, the requirements for which are given specifically under Elementary German B, Elementary French B and Arithmetic.

### Subjects

	POINTS
Algebra (I Elementary)	I
Algebra (II Advanced)	I
Plane Geometry	I
English (Three Years)	3
English (Additional Year)	I
German (Elementary One Year)	I
French (Elementary One Year)	I
History { American	I
{ English	I
{ Mediaeval and Modern	I
Arithmetic	I

## ENTRANCE EXAMINATION

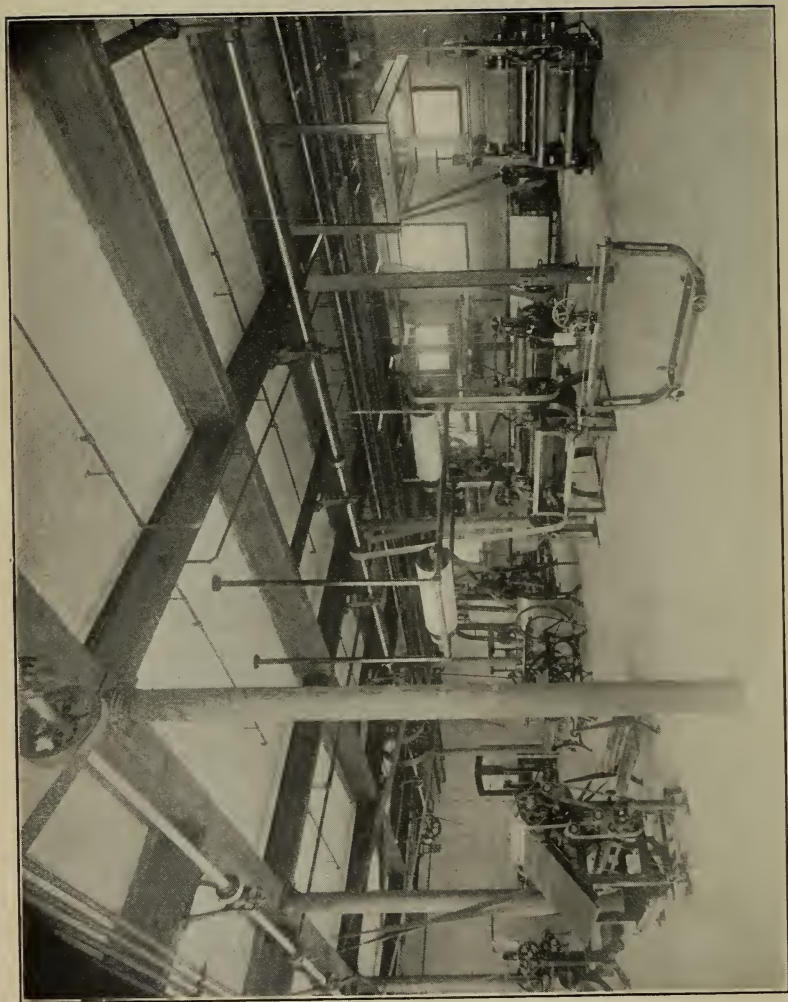
All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examinations for admission to the diploma and degree courses will be held as follows:

Tuesday, June 15, 1915; Tuesday, September 7, 1915; Tuesday, June 13, 1916:

Algebra	9 A. M. to 11 A. M.
History	11 A. M. to 1 P. M.
English	2 P. M. to 4 P. M.

Wednesday, June 16, 1915; Wednesday, September 8, 1915; Wednesday, June 14, 1916:

Plane Geometry	9 A. M. to 11 A. M.
German or French	11 A. M. to 1 P. M.
Arithmetic	2 P. M. to 4 P. M.



COTTON FINISHING

Applicants who wish to take the degree courses and cannot enter upon certificate must send to the Principal not later than June 9, for June examinations and September 1, for Fall Examinations, a list of the subjects which they offer for examination. The dates for these examinations will be in accordance with the above schedule and special dates will be assigned for the examination in elective subjects.

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

## **REQUIRED SUBJECTS FOR ENTRANCE**

### **Algebra**

I. Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equation of either numerical or literal quantities, radicals, involution, and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

II. Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

### **Plane Geometry**

The usual theorems and constructions of good text books including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

### **Arithmetic**

(Diploma Course Requirement)

This subject should be pursued for two reasons: that the applicant may acquire familiarity with the fundamental principles and that he may acquire accuracy in solution. Special attention should be given to problems in percentage, interest, discount, square and cube root, alligation, ratio and proportion, Metric System.

### **English**

As secondary schools are following to a greater extent than heretofore, the requirements of the College Entrance Examination Board, it is recom-



VIEW OF MANUFACTURED MATERIALS



mended that the applicant to this school conform to the suggestions of this Board relative to English composition and Literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature and to test this examination questions in 1915 will be based on the following books:

Shakespeare's *Macbeth*.

Milton's *L'Allegro*, *Il Penseroso* and *Comus*.

Either,

Burke's Speech on Conciliation with America.

or both of the following:

Washington's Farewell Address.

Webster's First Bunker Hill Oration.

Either,

Macaulay's *Life of Johnson*.

or

Carlyle's *Essay on Burns*.

In the future preparation in accordance with the recommendations of the College Entrance Examination Board will be accepted.

### Modern Languages

#### REQUIREMENTS FOR DEGREE COURSES

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction that greater care may be used in translation.

#### *Elementary German A*

The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple German prose into good idiomatic English.

(b) Questions to test proficiency in grammar and simple English sentences to be rendered into German.





LIBRARY

The requirements include the declension of articles, adjectives, pronouns, and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs and the elementary rules of syntax and word order.

Among the texts suggested for prospective candidates are:

Anderson's *Märchen*.  
Arnold's *Fritz auf Ferien*.  
Baumbach's *Die Nonna* and *Der Schwiegersohn*.  
Gerstacker's *Germelshausen*.  
Heyse's *L'Arrabbiata*.  
Hillern's *Hoher als die Kirche*.  
Jensen's *Die braune Erica*.  
Storm's *Immensee*.  
Zschokke's *Der zerbrochene Krug*.

#### *Elementary French A*

The entrance examination is composed of two parts, both taken, however at the same time.

- (a) Translation of simple French prose into good idiomatic English.
- (b) Questions to test proficiency in grammar and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronoun; and the simpler uses of the conditional and subjunctive.

Among the texts recommended for prospective candidates are:

About's *Le roi des montagnes*.  
Bruno's *Le tour de la France*.  
Daudet's *easier short tales*.  
De la Bédollière's *La mère Michel et son chat*.  
Erckmann — Chatrian's *Madame Thérèse*.  
Foa's *Contes Biographiques*.  
Halévy's *L'Abbé Constantin*.  
Mérimée's *Colomba*.  
Extracts from Michelet.  
Sarcey's *Le siège de Paris*.  
Verne's *Le tour du monde en quatre-vingts jours*.  
Molot's, *sans famille*

Note:—Students who have pursued two years of Elementary French as well as two years of Elementary German may present one subject to cover 2 points in the required subjects and the other to cover 2 points in the elective subjects.

## REQUIREMENTS FOR DIPLOMA COURSES

### *Elementary French B*

Applicants who enter for one of the three year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar and be able to translate simple French prose into good idiomatic English, also to translate into French, English sentences based on the French given for translation.

### *Elementary German B*

Applicants who enter for one of the three year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

### **History**

Applicants may offer a preparation of American History, English History or Mediaeval and Modern History.

In American History applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be prepared to consider also questions requiring an elementary knowledge of Civil Government as well as historical facts connected with the growth of this country up to the present time.

For the subject of English History or Mediaeval and Modern History the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

## **ELECTIVE SUBJECTS**

### **History**

If the applicant can present all three or any two branches of history specified he may include one as a required subject and the others in the list of elective subjects.

### **Physics**

The applicant should be familiar with the fundamental principles of Physics, particularly those considered under the headings of Mechanics, Heat, Light, Electricity and Magnetism. Text book instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in this subject if he has not been able to carry

on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his note-book together with the certificate from the teacher under whom the work was performed.

### **Chemistry**

Applicants must show evidence of their familiarity with the rudiments of Chemistry. Any course given in a secondary school organized to present instruction by means of text book or lecture together with co-related laboratory work will be considered as covering the requirements. The applicant's note book with his original notes including description of experiments, apparatus used, reactions, observations, and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the note-book.

### **Solid Geometry**

The usual theorems and constructions of good text books including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

### **Trigonometry**

The usual courses of instruction covered by the standard text books on Plane and Spherical Trigonometry will prepare an applicant sufficiently to meet this requirement.

### **Mechanical Drawing**

The applicant must have pursued such a course in Mechanical Drawing that he will be familiar with the usual Geometrical Construction Problems, Projection of Points, Lines, Planes, and Simple Solids.

Importance is laid not only upon the accuracy with which the work is performed but upon the general arrangement, appearance, and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

### **Mechanic Arts**

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfillment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.



### **Advanced French or German**

In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under Elementary French or German, they may offer the additional year as an elective.

### **English**

In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the additional year's work as one of his elective subjects.

## **GENERAL INFORMATION**

### **Preparation**

Particular stress should be laid upon a thorough grounding in mathematics including Algebra, Arithmetic and Plane Geometry, as these form the basis upon which the work of this school rests. While Solid Geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including Physics and Chemistry, serves to prepare the student's mind for the higher branches of these subjects and their application, but neither will be considered as the equivalent of the courses in these branches given in the school.

### **Advanced Standing**

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained, they may elect such further work as their preparation will permit.

### **Attendance Card**

At the beginning of each term all students must fill out and file with the Principal on blank forms which are provided, a formal application for such subjects as are required in his course and for which he is sufficiently prepared, subject to the approval of the Principal. When an attendance card is once approved, no change can be made except through the Principal.

### **Application Blanks**

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants whether entering upon certificate from a secondary school or presenting themselves for examination.



## Fees

The fee for the day course is \$105 per year for residents of Massachusetts, with the exception of the Chemistry and Dyeing Course, for which the fee is \$130 for Second, Third and Fourth Year students. For First Year students taking the Chemistry and Dyeing Course the first term fee is \$63 and the second term fee \$54.50. For non-residents the fee for all courses is \$155 per year. The fee for students from foreign countries is \$305 per year.

Three-fifths of the fee is charged for a single term. The first term's tuition is payable on or before October 10, the balance on or before February 10, of each year. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the Trustees.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the Principal for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.

For all first year students a minimum deposit of \$20 is required to cover the cost of breakage in the chemical laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry or Dyeing Laboratories a deposit of \$20 for the first term and \$15 for the second term is required. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

## Examinations

Intermediate examinations are held every five weeks and these serve to inform the student concerning his standing and the progress made.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first term subjects are held in May and examinations for students conditioned in the Final Examinations are held in September following.

If a student fails to clear a condition at the time appointed, he will be required to repeat or drop the subject; and he cannot be admitted to subjects dependent thereon.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.

### **Records and Reports of Standing**

Twice during each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

### **Thesis**

All candidates for the degree of the school must file with the Principal not later than May 15, a report of original investigation, or research, written on a good quality of paper, 8 x 10 inches, with one inch margin at left, and 1-2 inch at right of each page; such thesis to have been previously approved by the head of the department in which it is made.

For all candidates for the diploma this requirement will be optional on the part of the school.

### **Graduate Course**

Graduates of technical courses of other schools are invited to communicate with the Principal with reference to special courses in the textile studies. Previous training in the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

### **Partial Courses**

While it is assumed that in general every student will pursue some one of the regular courses it is recognized that there may be some who because of special vocations or limited time desire to obtain instruction in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparation see page 109.

Applicants must present satisfactory evidence by examination or otherwise that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in Textile Design, Decorative Art, Cloth Analysis, Weaving and Finishing. While no specified limit is given for this course the usual time has been three years. It is expected that students taking this course will devote all of the regular school session to these subjects and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

### **Special Awards of Merit**

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:

First:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in First Year Chemistry.

Second:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in First Year Chemistry.

Third:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth:—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best Thesis preparatory to graduation.

The above mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.

### **Degrees**

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in Textile Engineering. The degree of Bachelor of Textile Dyeing will be awarded for the completion of the four-year course in Chemistry and Textile Coloring.

### **Diploma**

For the present the diploma of the School will be awarded upon the satisfactory completion of any one of the regular courses, covering not less than three years, except where entrance is to advanced standing. In such cases at least one year's attendance is required.

### **Medals of Honor**

The National Cotton Manufacturers' Association offers annually a medal to that member of the third year class who shall have during his course attained the highest standing in the specified subjects required by the vote of the association.

### **Attendance**

All regular students must attend all exercises of their course. Special students must attend exercises as per their Tabular View.

In case of absence explanation must be made to the instructor or the Head of the Department. The effect of such absence upon a student's standing in the respective study will rest with the Head of the Department subject to the approval of the Principal.

If a student absents himself from any department to such an extent that in the mind of the Head of the Department he is endangering his standing, he shall be reported to the Principal.

If he continues his non-attendance, he may be required to drop the subject and repeat it the following year.

If he is reported from several departments on account of non-attendance, he may be suspended from the school for the remainder of the school year.

### **Conduct**

Students are required to return to the proper place all instruments or apparatus used in experimental work and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents, or irregularities of any kind must be reported immediately to the head of the department, or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentlemanly conduct or general insubordination, are considered good and sufficient reasons for the immediate suspension of a student, and a report to the Trustees for such action as they deem necessary to take.

It is the aim of the Trustees so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the Trustees as a most serious offense and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.



Any student who violates these provisions will be immediately suspended by the Principal and the case reported at the following meeting of the Trustees for action.

Young men abounding in vitality when suddenly cut loose from home and established social environment to acquire an education at a residential school, need especially the careful direction of more mature minds in the formation of new associations. The management of all residential schools are aware that this fact is the cause of considerable anxiety on the part of parents and guardians. The responsibility thus placed upon those under whose care these pupils are committed is profoundly recognized.

The public schools are for boys and girls, the college for youth, the higher technical and professional schools of medicine, law, engineering, etc., are for men. It is now fully recognized that the fundamental idea of the general educational system, from the kindergarten to the college inclusive, should be the development and establishment of character, and it is therefore expected that those entering the technical schools will have made some progress in self-respect, self-denial and self-control. They enter substantially upon their life work when they matriculate at the higher technical schools and may be placed on their honor as to conduct and not be subject to an irritating and humiliating system of espionage outside of school hours.

In place of such espionage it is the policy of technical schools to rely mainly upon the discipline of the work of the course in connection with facilities for physical exercise in the various athletic games and sports, for which ample provision has been made at this school.

Pupils often err in conduct from thoughtlessness and lack of experience rather than through wilfulness, and unconsciously fall into bad habits because of the lack of intelligent warning and instruction. For this reason, it is proposed to give thorough instruction by lectures, covering the subjects of hygiene, the preservation of physical vigor, morals, thrift and the duties of citizenship. A careful scrutiny will also be maintained by the instructing staff in order to detect in the students any tendency of relaxation in the work or attendance, and all reasonable efforts will be made to maintain a high standard of scholarship and morals.

### Library

The school library is supplied with leading textile books and with works dealing with science, art or industries allied to the textile trades. The leading textile papers are kept on file.

### Sessions

The regular school sessions are in general from 8.30 a. m. to 12.30 p. m., and from 2 to 4.30 p. m., except Wednesdays and Saturdays when there is no session of the school in the afternoon. On Saturday afternoons the buildings are closed.



A tabular view designates the hours at which the various classes meet. This is rigidly adhered to and the student is marked for his attendance and work as therein scheduled.

### **Residence and Expenses**

Students from a distance, requiring rooms and board in the city, may if they desire, select the same from a list which is kept at the School. The cost of rooms and board in a good district is from \$6.50 per week upwards.

All raw stock and yarn provided by the School, and all the productions of the School remain, or become, the property of the Trustees, except by special arrangement, but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the Trustees may retain in the school such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. The student must provide a good padlock with duplicate keys, one of which must be delivered at the school office where it will be preserved for use while the student remains at school.

No books, instruments, or other property of the school are loaned to the students to be removed from the premises except by special permission.

### **Awards**

Gold Medal, Paris Exposition, 1900, for general excellence. A special Medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American Medal awarded to the School, 1901. Gold Medal, Louisiana Purchase Exposition, 1904, Gold Medal, Lewis and Clarke Centennial Exposition, 1905.

### **Bulletins and Catalogues**

All students registering and paying the regular fee for the course selected are entitled to the Bulletins and Catalogues when issued.

## Courses of Instruction

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Since its establishment, the Lowell Textile School has offered courses, each of which extends over a three year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work the better preparation must be demanded of the applicant for entrance.

Nevertheless it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position to devote four years to scholastic preparation, and for these the regular three year courses are offered.

These courses are designated as:—

Cotton Manufacturing.

Wool Manufacturing.

Textile Design (General Textile Courses)

Chemistry and Dyeing.

Textile Engineering.

At the completion of any one of these the regular diploma of the school is awarded.

In general it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

For those who desire and who have the proper entrance qualifications to pursue the more advanced work in Textile Engineering, and Chemistry and Textile Coloring, four-year courses are offered at the completion of which the degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Dyeing (B. T. D.) are conferred.

Three options are offered in the Engineering Course, viz: General Textile, Cotton Manufacturing, or Wool Manufacturing. Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of Textile Chemistry and Textile Engineering. It is maintained that for one to be successful in either of these important branches of industry, a training is required as thorough and broad as that for any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by over stimulation of the technical development.

### COURSES FOR WOMEN

Although all classes are open to women the courses which have appealed especially to their tastes have been Textile Designing and Decorative Art. Some have pursued courses in Chemistry and have added to their work in Design some instruction in Power Weaving and Finishing. These special courses have in general been followed for three years and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

As the school work is made special to meet the needs of each case, no prescribed course of study is given in this catalogue. Inquiries should be made of the Principal.

## Courses

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 109.

The departments are indicated as follows:

Textile Engineering	B	Cotton Yarns	F
Chemistry and Dyeing	C	Woolen and Worsted Yarns	G
Textile Design and Power		Finishing	H
Weaving	D	Physical Culture	I
Languages and History	E		

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

### FIRST Year

#### FIRST TERM

*(Common to all courses)*

	Hours of Exercise
Mechanism B-3	60
Mechanical Drawing B-7	75
Mathematics B-1	45
Textile Design D-1	75
Elementary Chemistry C-1	150
English E-1	30
Elementary German E-2 or Elementary French E-4	30
Physical Culture I-1	30

#### SECOND TERM

Course VI-4      Course IV-4

Mechanism B-3	45	45
Mechanical Drawing B-8—B-9	90	30
Mechanical Laboratory B-6	37	—
Mathematics B-1	45	30
Textile Design D-1	60	30
Elementary Chemistry C-1	75	82
Cotton Yarn F-1 or Wool Yarn G-1	60	—
English E-1	30	30
Elementary German E-2 or Elementary French E-4	38	30
Physical Culture I-1	30	30
Qualitative Analysis C-2	—	173
Stoichiometry C-3	—	30

For second term subjects in courses I, II, and III see pages 93-95-101-107.

### COURSE I-3.—COTTON MANUFACTURING

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The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloths or allied industries and who wish to devote but three years to the school work.

During the first year, the studies are common to all courses and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry and hand loom weaving assists in illustrating the principles of textile design.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry followed by instruction in textile chemistry and dyeing, including a short course in the dyeing laboratory.

The work in mechanism serves as a basis for all future machine and mechanical work and is followed by steam engineering, electricity, hydraulics and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in draughting.

The course in textile designing, cloth analysis, and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. There is also a course on the finishing of cotton fabrics which is given by lectures and laboratory work.

For detailed description of the subjects see page 109.



## COURSE 1-3.—COTTON MANUFACTURING

(For First Term See Page 91)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 38
Mathematics	B-1 34	Elementary French	E-4 }
Textile Design	D-1 78	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 105	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 240	Machine Drawing	B-10 30
Textile Design	D-2 60	Steam Engineering	B-12 45
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing	C-9 30	Physics	B-11 30
		Industrial History	E-6 15

#### SECOND TERM

Cotton Yarn Manufacture	F-1 165	Machine Drawing	B-10 45
Textile Design	D-2 60	Strength of Materials	B-4 30
Power Weaving	D-9 67	Physics	B-11 45
Textile Chemistry and Dye- ing	C-9, 11 83	Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 173	Power Weaving	D-10 165
Knitting	F-2 30	Cotton Finishing	H-2 67
Textile Design, Cloth Con- struction	D-6,7 30	Electricity	B-20 15
		Mill Engineering	B-17 30

#### SECOND TERM

Cotton Manufacture	F-1 225	Mill Engineering	B-17 45
Knitting	F-2 30	Power Weaving	D-10 98
Textile Design, Cloth Con- struction	D-6,7 30	Cotton Finishing	H-2 67
Hydraulics	B-13 15	Thesis	

### COURSE II-3.—WOOL MANUFACTURING

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The course of Wool Manufacturing is arranged for those who contemplate a career in the manufacture of woollen or worsted fabrics and can devote but three years to the school work. It includes instruction in all of the varied processes employed in adapting the wool fibre to cloth, namely,—sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student commences work in the Woollen and Worsted Laboratory, and through systematic steps becomes acquainted with the machines employed in the first steps of yarn manufacturing. At the same time lectures are given upon the many kinds of wool, variation in quality, grades, uses, etc., as influenced by the locality where grown. This is followed by practical work on the sorting table.

The second and third years cover spinning of woollen yarn and worsted yarn by the Bradford and French systems, also the manufacture of tops, including combing, gilling and back washing. Scouring and carbonizing are taken up in detail by lectures and by practical work.

The general chemistry of the first year is followed by textile chemistry and dyeing in the second year. This includes a short course in the Dyeing Laboratory.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woollen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years and includes mechanical drawing, properties of saturated steam, electricity and hydraulics. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill design and construction are considered. A short course covering methods employed in the testing of fibres, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 109.

## COURSE II-3.—WOOL MANUFACTURING

(For First Term See Page 91)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 38
Mathematics	B-1 34	Elementary French	E-4 }
Textile Design	D-1 78	Physical Culture	I-1 30
Wool Yarn Manufacture	F-1 105	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Woolen and Worsted Yarn		Machine Drawing	B-10 30
Manufacture	G-1 240	Steam Engineering	B-12 45
Textile Design	D-3 60	Weaving Mechanism	B-5 30
Power Weaving	D-9 30	Physics	B-11 30
Textile Chemistry and Dye- ing	C-9 30	Industrial History	E-6 15

#### SECOND TERM

Woolen and Worsted Yarn		Machine Drawing	B-10 45
Manufacture	G-1 165	Strength of Materials	B-4 30
Textile Design	D-3 60	Physics	B-11 45
Power Weaving	D-9 67	Industrial History	E-6 15
Textile Chemistry and Dye- ing	C-9, 11 83		

### THIRD YEAR

#### FIRST TERM

Woolen and Worsted Yarn		Power Weaving	D-10 202
Manufacture	G-1 128	Woolen and Worsted	
Knitting	F-2 30	Finishing	H-1 75
Textile Design, Cloth Con- struction	D-6, 7 30	Electricity	B-20 15
		Mill Engineering	B-17 30

#### SECOND TERM

Woolen and Worsted Yarn		Mill Engineering	B-17 45
Manufacture	G-1 180	Power Weaving	D-10 97
Knitting	F-2 30	Woolen and Worsted	
Textile Design, Cloth Con- struction	D-6, 7 68	Finishing	H-1 75
Hydraulics	B-13 15	Thesis	

### COURSE III-3.—TEXTILE DESIGN

(General Textile Course)

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The general course in Textile Design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn and of woollen and worsted yarns from the fleece through the varied processes of manufacturing woollen yarn or worsted yarn by both the French and Bradford Systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz.—trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving which serves not only to acquaint the student with the many kinds of cotton, woollen, worsted, and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative Art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year. The instruction includes a short course in the dyeing laboratory.

Power weaving commences with the second year and continues throughout the course and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woollen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 109.

**COURSE III-3.—TEXTILE DESIGN**  
(General Textile Course)

*(For First Term See Page 91)*

**FIRST YEAR**

**SECOND TERM**

	Hours of Exercise			Hours of Exercise	
Mechanism	B-3	45	Elementary Chemistry	C-1	75
Mechanical Drawing	B-8	75	Elementary German or	E-2	38
Mathematics	B-1	34	Elementary French	E-4	
Textile Design	D-1	123	Physical Culture	I-1	30
Cotton Yarn Manufacture	F-1	60	English	E-1	30

**SECOND YEAR**

**FIRST TERM**

Textile Design, Decorative Art, Hand Loom Weaving	D-2, 3, 4, 5	173	Machine Drawing	B-10	30
Cotton Yarn Manufacture	F-1	90	Steam Engineering	B-12	45
Power Weaving	D-9	67	Weaving Mechanism	B-5	30
Textile Chemistry and Dyeing	C-9	30	Physics	B-11	30
			Industrial History	E-6	15

**SECOND TERM**

Textile Design, Decorative Art, Hand Loom Weaving	D-2, 3, 4, 5	157	Textile Chemistry and Dyeing	C-9, 11	67
Wool Yarn Manufacture	F-1	105	Physics	B-11	45
Power Weaving	D-9	82	Industrial History	E-6	15
			Cotton Yarn Manufacture	F-1	37

**THIRD YEAR**

**FIRST TERM**

Textile Design, Cloth Construction, Decorative Art	D-6, 7, 8	158	Power Weaving	D-10	120
Woolen and Worsted Yarn Manufacture	G-1	112	Woolen and Worsted Finishing	H-1	75
			Cotton Finishing	H-2	30
			Electricity	B-20	15

**SECOND TERM**

Textile Design, Cloth Construction, Decorative Art	D-6, 7, 8	135	Power Weaving	D-10	128
Woolen and Worsted Yarn Manufacture	G-1	112	Woolen and Worsted Finishing	H-1	75
			Cotton Finishing	H-2	60
			Thesis		



#### COURSE IV-4.—CHEMISTRY AND TEXTILE COLORING

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The Four Year Course in Chemistry and Textile Coloring leading to the degree of B. T. D. is especially intended for those who wish to engage in any branch of Textile Chemistry, Textile Coloring, Bleaching, Finishing, or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring, and finishing are taught by lecture work supplemented with a large amount of experimental laboratory work and actual practice in the dye-house and finishing room.

The underlying theories and principles of chemistry are the same no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the Textile Colorist must consider the complex composition of the textile fibres, and the obscure reactions which take place between them and the other materials of the textile industry.

During the first year General Chemistry including both Inorganic and Organic is taught by lectures and laboratory work, and this is supplemented during the second term by Qualitative Analysis and Stoichiometry.

Advanced Inorganic Chemistry as well as Advanced Organic Chemistry are studied during the second and third year as a continuation of the Elementary Chemistry of the first year, and much time is spent upon Quantitative Analysis, Industrial Chemistry, and Textile Chemistry and Dyeing.

The foundation work in General Chemistry is continued during the third year with courses in Physical Chemistry, Organic laboratory work, and analytical work. The subject of Industrial Chemistry is introduced and much time is devoted to Advanced Textile Chemistry, Dye Testing, Color Matching, Calico Printing, and Woolen, Worsted, and Cotton Finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of Engineering Chemistry is introduced and the work in the Dyeing and Analytical laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in Microscopy, Photomicrography and the use of the various instruments such as the Spectroscope, Ultra-microscope, Polariscopes, Tintometer, etc., which often prove of vital importance in the advanced study of Textile Chemistry. During this fourth year, the student must devote much time to research work, or the original investigation of some assigned subject, upon which he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 109.

# COURSE IV-4.—CHEMISTRY AND TEXTILE COLORING

(For First Year See Page 91)

## SECOND YEAR

### FIRST TERM

	Hours of Exercise		Hours of Exercise
Advanced Inorganic Chemistry	C-4 45	Stoichiometry	C-3 15
Textile Chemistry and Dyeing Lecture	C-9 30	Quantitative Laboratory	C-7 195
Textile Chemistry and Dyeing Laboratory	C-10 68	Steam Engineering	B-12 45
Quantitative Analysis Lect.	C-7 15	Physics	B-11 30
		Industrial History	E-6 15
		Advanced German	E-3 30
		Power Weaving	D-9 22

### SECOND TERM

Advanced Inorganic Chemistry	C-4 30	Quantitative Lab. Lect.	C-7 15
Textile Chemistry and Dyeing Lecture	G-9 15	Quantitative Laboratory	C-7 112
Textile Chemistry and Dyeing Laboratory	C-10 203	Advanced Organic Chemistry	C-5 30
Stoichiometry	C-3 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30

## THIRD YEAR

### FIRST TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemistry and Dyeing Lab.	C-14 195	Advanced Organic Chemistry Lecture	C-5 45
Industrial Chemistry	C-13 30	Technical German	C-21 30
Quantitative Analysis Lect.	C-7 15	Woolen and Worsted Finishing	H-1 30
Quantitative Analysis Lab.	C-7 120		

### SECOND TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemistry and Dyeing Lab.	C-14 105	Technical German	C-21 30
Industrial Chemistry	C-12 30	Organic Laboratory	C-15 105
		Quantitative Analysis Lect.	C-7 15
		Quantitative Analysis Lab.	C-7 130

## FOURTH YEAR

### FIRST TERM

Physical Chemistry	C-8 15	Quantitative Analysis and Industrial Analysis	C-17 105
Technical German	C-21 30	Dyeing Laboratory	C-14 60
Engineering Chemistry	C-16 5	Organic Laboratory	C-15 105
Advanced Textile Chemistry and Dyeing	C-14 10	Industrial Laboratory	C-12 75
Advanced Organic Chemistry Dyestuffs	C-20 15	Thesis	C-22 90

### SECOND TERM

Organic Laboratory	C-15 120	Advanced Dyeing Conference	C-19 15
Microscopy	C-18 37	Economics	E-7 30
Thesis	C-22 158	Technical German	C-21 30
Dyeing Laboratory	C-14 120		

### COURSE IV-3.—CHEMISTRY AND DYEING

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The three year course in chemistry and dyeing is offered to those who are not able to devote four years for the course in chemistry and textile coloring. Many of the same subjects are given in the three year course that are included in the four year course, but it is not possible to cover these to the same extent in three years as in the longer course. The course, however, offers a very satisfactory preparation for those who intend to enter upon any branch of textile coloring, bleaching, or the manufacture or sale of the various dyestuffs and chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring, etc., are taught by lecture work supplemented with a large amount of laboratory work.

During the first year general chemistry, including both inorganic and organic, is taught by lectures and laboratory work, and this is supplemented during the second term by qualitative analysis and stoichiometry.

Advanced inorganic as well as advanced organic chemistry are studied throughout the second year as a continuation of the elementary chemistry of the first year, but the greater part of the time is spent upon quantitative analysis, industrial chemistry and textile chemistry and dyeing.

The third year is devoted to advanced textile chemistry and dyeing, dye testing, dye matching, woolen and worsted finishing, calico printing and cotton finishing, quantitative analysis, industrial chemistry, and physical chemistry.

The work is taken up in a thorough manner and has been so arranged that an equal amount of time is spent in the laboratories and in classroom work. Sufficient studies are taken in the other departments to broaden the knowledge of the student in regard to textile work in general, and he is given such training as the time will permit in mathematics, mechanical drawing, modern languages and designing.

The student who conscientiously performs all of the prescribed laboratory work and the practice work should be proficient not only in dyeing and textile printing, but should be well trained in the methods of analysis and the testing of the various chemicals, mordants and dyestuffs so extensively used in the textile industry.

For detailed description of the subjects see page 109.

# COURSE IV-3.—CHEMISTRY AND DYEING

(For First Term See Page 91)

## FIRST YEAR

### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary German or	E-2 } 30
Mechanical Drawing	B-7 30	Elementary French	E-4 } 30
Mathematics	B-1 30	Physical Culture	I-1 30
Cloth Analysis	D-1 30	Qualitative Analysis	C-2 173
Elementary Chemistry	C-1 82	Stoichiometry	C-3 30
English	E-1 30		

## SECOND YEAR

### FIRST TERM

Advanced Inorganic Chem- istry	C-4 45	Stoichiometry	C-3 15
Textile Chemistry and Dye- ing Lecture	C-9 30	Quantitative Laboratory	C-7 195
Textile Chemistry and Dye- ing Laboratory	C-10 68	Steam Engineering	B-12 45
Quantitative Analysis Lect.	C-7 15	Physics	B-11 30
		Industrial History	E-6 15
		Advanced German	E-3 30
		Power Weaving	D-9 22

### SECOND TERM

Advanced Inorganic Chem- istry	C-4 30	Quantitative Lab. Lect.	C-7 15
Textile Chemistry and Dye- ing Lecture	C-9 15	Quantitative Laboratory	C-7 112½
Textile Chemistry and Dye- ing Laboratory	C-10 203	Advanced Organic Chem- istry	C-5 30
Stoichiometry	C-3 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30

## THIRD YEAR

### FIRST TERM

Advanced Textile Chemis- try and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemis- try and Dyeing Lab.	C-14 195	Advanced Organic Chem- istry Lecture	C-5 45
Industrial Chemistry	C-13 30	Technical German	C-21 30
Quantitative Analysis Lect.	C-7 15	Woolen and Worsted	
Quantitative Analysis Lab.	C-7 120	Finishing	H-1 30

### SECOND TERM

Advanced Textile Chemis- try and Dyeing Lecture	C-14 15	Technical German	C-21 30
Advanced Textile Chemis- try and Dyeing Lab.	C-14 105	Advanced Dyeing Con- ference	C-19 15
Industrial Chemistry	C-12 30	Quantitative Analysis Lect.	C-7 15
Physical Chemistry	C-8 30	Quantitative Analysis Lab.	C-7 130

### OPTIONS

Organic Laboratory	C-15 }
Quantitative Lab. (extra)	C-7 }
Dyeing Laboratory (extra)	C-14 } 90



#### COURSE VI-4.—TEXTILE ENGINEERING

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At the organization of the school four major courses were offered but with the growth of the school a demand was felt for instruction in engineering subjects supplemented by a study of textile machinery and processes. A three year course to meet this demand was offered and the development of this through a study of the possible requirements of a Textile Engineer has made evident a broader course of four years which leads to the degree of Bachelor of Textile Engineering (B. T. E.).

The subjects of the first year which are substantially the same for all courses are intended to lay the foundation for the subsequent dependent instruction in the applied courses. Hence, the subjects of Mathematics, Chemistry, Mechanism, and Mechanical Drawing not only operate to develop the mind and stimulate accurate thinking, but also set forth the principles which are later to be used in a clear understanding of machines and methods. The course in Elementary Designing acquaints the student with textile fabrics and their construction. The subjects of English and one foreign language give the student a better understanding of his own language that he may express himself clearly, and by acquaintance with a foreign language he may obtain information not available in his own tongue.

In the second term instruction in Cotton Yarn Manufacturing commences. This is continued into the second year followed in the succeeding years by Wool Manufacturing, Weaving, and Finishing. Chemistry of the first year develops into Textile Chemistry and Dyeing of the second year, and during this year an advanced course of Physics is given, leading to Electrical Engineering and its application in the textile industry. Mathematics are finished with the third year and during the course the branches of higher Algebra, Trigonometry, Analytical Geometry, and Calculus are studied with particular reference to the solution of engineering problems, as found in the subjects of Applied Mechanics, Electrical, Heat, and Mill Engineering, which are a part of the second, third, and last years' work.

The fourth year permits of a pursual of more advanced work in Mill Engineering, Electrical and Heat Engineering, as well as some further instruction in those textile processes of Cotton and Worsted Spinning, Cotton Finishing, etc., for which three years' time does not permit. General courses of Business Law, Accounting and Principles of Efficiency Engineering under the head of Business Administration are included in the fourth year.

For detailed description of the subjects see page 109.



# COURSE VI-4.—TEXTILE ENGINEERING

## General Textile Option

(For First Year See Page 91)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing	C-9 30	Engineering Laboratory	B-14 37
Physics	B-11 30	Weaving Mechanism	B-5 30
Mathematics	B-2 45	Shop Work	B-15 60
Machine Drawing	B-10 105	Cotton Yarn Manufacture	F-1 75
Steam Engineering	B-12 45	Advanced German	E-3-5 30
Power Weaving	D-9 30	Industrial History	E-6 15

#### SECOND TERM

Textile Chemistry and Dye- ing	C-9 15	Steam Engineering	B-14 52
Physics	B-11 45	Shop Work	B-15 60
Mathematics	B-2 45	Wool Yarn Manufacture	F-1 105
Strength of Materials	B-4 30	Advanced German	E-3-5 30
Machine Drawing	B-10 75	Industrial History	E-6 15
		Power Weaving	D-9 30

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-19 38	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Cotton Finishing	H-2 15
Engineering Laboratory	B-14 37	Mathematics	B-2 30
Woolen and Worsted Yarn Manufacture	G-1 120	Mill Engineering	B-17 68
Economics	E-7 30	Woolen and Worsted Finishing	H-1 67

#### SECOND TERM

Hydraulics	B-13 15	Cotton Finishing	H-2 30
Electrical Engineering	B-19 75	Woolen and Worsted Yarn Manufacture	G-1 68
Mill Engineering	B-17 90	Woolen and Worsted Finishing	H-1 30
Machine Shop Practice	B-15 60	Power Weaving	D-9 37
Engineering Laboratory	B-14 30		
Mathematics	B-2 45		
Economics	E-7 30		

### FOURTH YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 75	Woolen and Worsted Yarn Manufacture	G-1 67
Mill Engineering	B-17 105	Business Administration	E-8 97
Electrical Engineering	B-19 67	Strength of Materials	30

#### SECOND TERM

Cotton Yarn Manufacture	F-1 60	Business Administration	E-8 97
Mill Engineering	B-17 60	Thesis	68
Electrical Engineering	B-19 83	Textile Testing	G-2 45
Cotton Finishing	H-2 37	Strength of Materials	30

## COURSE VI-4.—TEXTILE ENGINEERING

### Cotton Option

(For First Year See Page 91)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing	C-9 30	Weaving Mechanism	B-5 30
Physics	B-11 30	Shop Work	B-15 60
Mathematics	B-2 45	Cotton Yarn Manufacture	F-1 75
Machine Drawing	B-8 75	Cotton Design	D-2 30
Engineering Laboratory	B-14 37	Advanced German	E-3, 5 30
Steam Engineering	B-12 45	Industrial History	E-6 15
		Power Weaving	D-9 30

#### SECOND TERM

Textile Chemistry and Dye- ing	C-9 15	Shop Work	B-15 60
Physics	B-11 45	Cotton Yarn Manufacture	F-1 83
Mathematics	B-2 45	Cotton Design	D-2 30
Strength of Materials	B-4 30	Power Weaving	D-9 30
Machine Drawing	B-8 75	Advanced German	E-3, 5 30
Steam Engineering	B-12 52	Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-19 38	Power Weaving	D-9 60
Machine Shop Practice	B-15 60	Economics	E-7 30
Mill Engineering	B-17 68	Engineering Laboratory	B-14 37
Cotton Yarn Manufacture	F-1 127	Mathematics	B-2 45
Cotton Design	D-6, 7 45		

#### SECOND TERM

Hydraulics	B-13 15	Cotton Design	D-6, 7 45
Electrical Engineering	B-19 75	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Economics	E-7 30
Mill Engineering	B-17 90	Engineering Laboratory	B-14 68
Cotton Yarn Manufacture	F-1 82		

### FOURTH YEAR

#### FIRST TERM

Mill Engineering	B-17 105	Cotton Design	D-6, 7 45
Electrical Engineering	B-19 67	Cotton Finishing	H-2 30
Cotton Yarn Manufacture	F-1 105	Power Weaving	D-10 30
Strength of Materials	30	Business Administration	E-8 97

#### SECOND TERM

Cotton Yarn Manufacturing	F-1 70	Textile Testing	45
Mill Engineering	B-17 60	Cotton Finishing	H-2 67
Electrical Engineering	B-19 67	Business Administration	E-8 97
Strength of Materials	30	Thesis	75

# COURSE VI-4.—TEXTILE ENGINEERING

## Wool Option

(For First Year See Page 91)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing	C-9 30	Shop Work	B-15 75
Physics	B-11 30	Woolen and Worsted Yarn Manufacture	G-1 68
Mathematics	B-2 45	Woolen and Worsted Design	D-3 30
Machine Drawing	B-8 75	Advanced German	E-3, 5 30
Weaving Mechanism	B-5 30	Industrial History	E-6 15
Engineering Laboratory	B-14 37		
Steam Engineering	B-12 45		

#### SECOND TERM

Textile Chemistry and Dye- ing	C-9 15	Woolen and Worsted Yarn Manufacture	G-1 83
Physics	B-11 45	Woolen and Worsted Design	D-3 45
Mathematics	B-2 30	Power Weaving	D-9 30
Strength of Materials	B-4 30	Advanced German	E-3, 5 30
Machine Drawing	B-8 75	Industrial History	E-6 15
Shop Work	B-15 60		
Steam Engineering	B-12 52		

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-19 38	Woolen and Worsted Design	D-6, 7 45
Machine Shop Practice	B-15 60	Power Weaving	D-9 60
Mathematics	B-2 45	Economics	E-7 30
Mill Engineering	B-17 68	Engineering Laboratory	B-14 37
Woolen and Worsted Yarn Manufacture	G-1 127		

#### SECOND TERM

Hydraulics	B-13 15	Woolen and Worsted Yarn Manufacture	G-1 82
Electrical Engineering	B-19 75	Woolen and Worsted De- sign	D-6, 7 45
Mill Engineering	B-17 90	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Economics	E-7 30
Engineering Laboratory	B-14 68		

### FOURTH YEAR

#### FIRST TERM

Mill Engineering	B-17 75	Woolen and Worsted Finishing	H-1 30
Electrical Engineering	B-19 67	Power Weaving	D-10 60
Worsted Yarn Manufacture	G-1 106	Business Administration	E-8 97
Strength of Materials	30		
Woolen and Worsted Design	D-6, 7 45		

#### SECOND TERM

Mill Engineering	B-17 60	Woolen and Worsted Finishing	H-1 67
Electrical Engineering	B-19 83	Business Administration	E-8 97
Worsted Yarn Manufacture	G-1 60	Thesis	68
Strength of Materials	30	Textile Testing	45

### COURSE VI-3.—TEXTILE ENGINEERING

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This course is planned to train as far as possible in three years the student to meet intelligently the engineering problems of the textile industry, as well as to provide him with the essentials of the processes and machines in the varied branches of this industry. Many of the subjects taken in this course are the same as given in VI-4, page 102, but some can not be taken up in the limited time while others can be carried farther in the fourth year.

The student is first thoroughly grounded in the broad fundamental principles of science and mathematics underlying all engineering work and textile manufacturing with its many closely allied industries. The most important of the preliminary subjects are mathematics, physics, mechanics and mechanism, and mechanical drawing. The work in mechanism and drawing is particularly thorough and the practical uses of these subjects are considered of first importance. The study of physics while taking up the usual branches included in this subject also serves to a preparatory course for later instruction in Steam, Electricity and Hydraulics. The student is required to spend a portion of his time during the course upon the subjects of cotton yarns, woolen and worsted yarns, and power weaving with practical work in each branch. During his first year he has a brief course in the elements of design, and in his second year he pursues a course in textile chemistry and dyeing which is preceded in the first year by the necessary preliminary course in elementary organic and inorganic chemistry. Special importance is attached to the study of power generation, transmission, and measurement and courses with laboratory practice are given in the elements of steam, electrical and hydraulic engineering, to familiarize the student with the means, methods and results available in the modern practice of these branches.

The recently equipped engineering laboratory together with the extensive power plant of the school affords opportunities for a varied line of experimental work including boiler, engine, turbine, generator and pump tests. Systematic instruction in the most approved methods of machine shop practice is provided in a shop which is fully equipped with the best makes of modern tools. This feature of the course is considered a most valuable adjunct to the training of a textile engineer.

The work in mill engineering covers a wide range of subjects including mill construction with calculations and drawings, mill heating, lighting, fire protection, and electric driving. The arrangement of plants and machinery for the most economical power distribution and efficient organization is also taken up in detail, data for problems being taken from actual cases and the solution compared with those of some of our best known mill engineers.

For detailed description of the subjects see page 109.



# COURSE VI-3.—TEXTILE ENGINEERING

(For First Term See Page 91)

## FIRST YEAR

### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary German or	E-2 } 30
Mechanical Drawing	B-8 98	Elementary French	E-4 }
Mathematics	B-1 45	Physical Culture	I-1 30
Textile Design	D-1 60	Mechanical Laboratory	B-6 37
Elementary Chemistry	C-1 75	Cotton Yarns	F-1 60
English	E-1 30		

## SECOND YEAR

### FIRST TERM

Cotton Yarn Manufacture	F-1 75	Steam Engineering	B-12 45
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing	C-9 30	Machine Shop Practice	B-15 60
Mathematics	B-2 45	Engineering Laboratory	B-14 37
Machine Drawing	B-10 105	Physics	B-11 30
		Industrial History	E-6 15

### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 105	Machine Drawing	B-10 75
Power Weaving	D-9 30	Steam Engineering	B-12 52
Textile Chemistry and Dye- ing	C-9 15	Strength of Materials	B-4 30
Mathematics	B-2 45	Machine Shop Practice	B-15 60
		Physics	B-11 45
		Industrial History	E-6 15

## THIRD YEAR

### FIRST TERM

Woolen and Worsted Yarn Manufacture	G-1 120	Cotton Finishing	H-2 15
Power Weaving	D-10 45	Machine Shop Practice	B-15 60
Woolen and Worsted Mill Engineering	B-17 68	Engineering Laboratory	B-14 37
Finishing	H-1 67	Electricity	B-19 38
		Mathematics	B-2 30

### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 97	Power Plants	B-18 15
Woolen and Worsted Finishing	H-1 30	Electrical Engineering	B-19 90
Cotton Finishing	H-2 15	Hydraulics	B-13 15
Mill Engineering	B-17 90	Machine Shop Practice	B-15 60
		Engineering Laboratory	B-14 37
		Thesis	68



## ENTRANCE REQUIREMENTS

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The requirements for admission to this school are given in detail on page 71.

### DIPLOMA COURSES—REQUIRED SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra (I Elementary. II Advanced.)
- A-3 Elementary German B  
or
- A-4 Elementary French B
- A-5 English
- A-6 History
- A-7 Arithmetic

### DEGREE COURSES—ELECTIVE SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra (I Elementary. II Advanced.)
- A-3 Elementary German A  
or
- A-4 Elementary French A
- A-5 English
- A-6 History

### DEGREE COURSES —REQUIRED SUBJECTS

- A-8 Physics
- A-9 Chemistry
- A-10 Solid Geometry
- A-11 Trigonometry
- A-12 Mechanical Drawing
- A-13 Mechanic Arts
- A-14 History
- A-15 Advanced German  
or
- A-16 Advanced French
- A-17 English

# Subjects of Instruction

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## TEXTILE ENGINEERING DEPARTMENT—B

### Mathematics

#### (Algebra, Trigonometry, Elements of Analytical Geometry)—B-1

PREPARATION: A-I, A-2

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of Higher Algebra and Trigonometry, in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, text-book, class and problem work, and consists essentially of the following: Progressions, Graphical Representation, Permutations and Combinations, Logarithms, Slide Rule, Trigonometry, Binomial Theorem, Partial and Continued Fractions, Series, Theory of Equations, Significant Figures, and Plotting of Scientific Data, Straight Line Equations, Point of Division of a Line, Equation of Parallel and Perpendicular Lines.

[ALL COURSES]

### Mathematics

#### (Analytical Geometry, Differential Calculus, Elements of Integral Calculus)—B-2

PREPARATION: B-I

This course is a continuation of the work of the first year, and treats of the following subjects: Formulae of Differentiation, Conic Sections, Transformation of Co-ordinates, Maxima and Minima, Direction of Curves, Center and Radius of Curvature, Problems on Differential Calculus, Elements of Integral Calculus, Integration as a Summation, and Plane Areas. The above are treated in both Rectangular and Polar Co-ordinates. Formulae of Integration, Integration by parts, Integration by Substitution, Successive Integration, Evaluation of Integrals, Center of Gravity, Center of Pressure, Total Pressure, Moment of Inertia.

[COURSES VI-4, VI-3]

### Mechanics and Mechanism—B-3

PREPARATION: A-1, A-2, B-1. TAKEN SIMULTANEOUSLY WITH B-1

These subjects are a necessary preparation for all courses and are taken in ninety hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance and the application and problems are selected with special reference to their practical uses in textile machinery. The large variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subject treated in this course are:

#### MECHANICS

Work, power and energy.  
Principle of moments.  
Simple and compound levers.  
Differential and common pulleys.  
Jack screw and worm and wheel.  
Parallelogram and triangle of forces.  
Inclined plane and wedge.

#### MECHANISM

Linear and angular velocity.  
Belting calculations.  
Gears and gear trains.  
Cam and cone pulley design.  
Linkage problems.  
Intermittent motions.  
Differential and epicyclic trains.

[ALL COURSES]

### Strength of Materials—B-4

PREPARATION: B-1 AND B-3

The work in this course is presented by lectures and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered. The course also includes a study of moment of inertia, dynamics and strength of materials.

[COURSES VI-4, VI-3]

### Weaving Mechanism—B-5

PREPARATION: TAKEN SIMULTANEOUSLY WITH D-9

This course consists of thirty lectures given during the first term of the second year and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[COURSES VI-4, I-3, II-3, III-3 AND VI-3]

### **Mechanical Laboratory—B-6**

PREPARATION: B-3. TAKEN SIMULTANEOUSLY WITH B-4

This work is given during the second term of the first year and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows:

Determination of coefficient of friction.

Proof of principle of moments.

Proof of principle of work.

Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jack screws, wedges, etc.

Experimental proofs of the principles of graphic statics.

Efficiency tests on belt transmission including measurement of belt tensions, co-efficient of friction, slip, etc.

Tests on various types of absorption dynamometers.

Calibration of transmission dynamometer.

Power measurements on textile machinery with differential dynamometer.

Measurement of friction of steam engine.

[COURSES VI-4, VI-3]

### **Mechanical Drawing—B-7**

PREPARATION: A-1. TAKEN SIMULTANEOUSLY WITH B-3

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions:

Care and use of drawing instruments.

Geometrical constructions.

Elements of projections and descriptive geometry.

Isometric projection.

Developments with practical applications.

Sketching practice on machine details.

[ALL COURSES]

### **Machine Drawing—B-8**

PREPARATION: B-7

This work is the continuation of the mechanical drawing and is pursued throughout the second term of first year. This work is wholly of a practical character and includes sketching from textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

### **Machine Drawing—B-9**

PREPARATION: B-7

For students electing IV-3 or IV-4 in the second term of the first year a course of machine drawing is given similar to B-8 except that it is not as extensive and is concluded in thirty hours.

### **Machine Drawing—B-10**

PREPARATION: B-3, B-7, B-8

During the second year a period of two hours per week is devoted to advanced graphical mechanism problems. The data for all of these problems is in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame cone design, mule quadrant motion, analysis of camless winder and a number of others of similar character.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

### **Physics—B-11**

PREPARATION: B-1

This course is given during the second year and serves especially as a preparation for Steam Engineering, Hydraulics, Electricity and Optics. The subject is presented by means of lectures, recitations, problems, and reference books. The lectures deal chiefly with the application of the various physical laws and principles with the view of their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: Gravitation, Moving Bodies, Mechanics, Elasticity, Hydrostatics, Elements of Hydraulics, Properties of Fluids and Gasses, and the Theory of Sound. These subjects are followed by a series of lectures on heat phenomena dealing with the Generation of Heat, Thermometry, Calorimetry, Transfer of Heat, its Effect on Solids, Liquids, and Gasses, and problems such as lead to the Elements of Steam Engineering.

The latter part of the course is devoted to the discussion of the laws governing the Nature, Propagation and Transmission of Light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young Helmholtz Theory of Color Sensation. During the last part of the course the principles of Electricity and Magnetism are taken up in detail.

[ALL COURSES]



## **Steam Engineering—B-12**

PREPARATION : B-II

The purpose of this work is to familiarize the student with the essentials of power generation and the means and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines, and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work, and also engine and boiler testing.

[ALL COURSES]

## **Hydraulics—B-13**

PREPARATION : B-3, B-II

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[COURSES I-3, II-3, VI-3, VI-4]

## **Engineering Laboratory—B-14**

PREPARATION : B-I2

The principles underlying the subjects of Steam Engineering, Hydraulics and Thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests :

Calibration of gages, thermometers, indicators, anemometers, tachometers, and other measuring instruments.

Experiments on flow of steam.

Calorimeter tests.

Radiation tests and pipe covering tests.

Injector and ejector tests.

Engine tests. Condensing and non-condensing.

Steam pump tests.

Surface condenser tests.

Valve setting.

Boiler testing.

Tests on heating and ventilating fans, both motor and engine driven.  
Pump tests. Triplex and centrifugal.  
Air compressor tests.  
Flue gas analysis.  
Steam turbine tests. Condensing, non-condensing and low pressure.  
Complete steam plant testing.  
Gas engine testing.

[COURSES VI-3, VI-4]

### **Machine Shop Practice—B-15**

PREPARATION: B-3

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools and the characteristics of the different materials worked. Arrangements have been made with a local machine company of such a character as to give the work the greatest educational value and the important commercial element which stimulates the student's interest. Particular attention is given to the form, setting, grinding, and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine shop practice on textile machinery. The list of tools which appears under Equipment in this bulletin gives an idea of the scope of the work which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of wood working tools, both hand and machine and in forging.

[COURSES VI-3, VI-4]

### **Mill Engineering—B-17**

PREPARATION: B-3, B-4, B-10

This work covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A detailed study is made of the most modern types of mill buildings including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.

The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions from mills

already built or in process of construction. The questions of mill heating, ventilation, lighting, humidification and fire protection are also studied and the time spent in the drawing-room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[COURSE VI-4]

### **Power Plants—B-18**

PREPARATION: B-13

This course, which consists of lectures given in the second term of the third year, takes up the fundamental considerations involved in the planning of a power plant for a textile mill. A standard text book is used in connection with the lectures and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[COURSES VI-3, VI-4]

### **Electrical Engineering—B-19**

PREPARATION: B-II

The elementary principles of Electricity and Magnetism are considered in a lecture course. The development and application are shown by detailed study of the means used to generate, transmit, and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of Direct and Alternating Current Generators, Motors, Instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[COURSES VI-3, VI-4]

### **Efficiency Engineering—B-20**

In recognition of the great advances which have been recently made towards better methods of management and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the students to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of the work of the various departments, es-

pecially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use and the relations of psychology to efficient management is also considered. Finally, visits to shops where modern methods of management have been installed enables the student to see the practical working out of the ideas developed in the lectures.

### *Accounting*

The purpose of the course in accounting is two fold. In the first place it aims to acquaint the student with the modern methods of handling the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such for instance, as the use of checks, drafts and notes, bank discounts, etc. In the second place it gives him an intelligent comprehension of the requirements and the design of a proper cost accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lectures and by practice work. It is coupled with instruction on the compilation of Balance Sheets in proper form, together with Profit and Loss statements and supporting schedules. Thus a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures and elaborated by actual practice.

Cost Accounting forms an important part of this subject and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

### *Business Law*

Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing Contracts, negotiable Instruments, Sales, Bills of Lading and Real Estate.

### *Patent Law*

During the fourth year a course of six lectures is given by a practicing Patent Attorney of Lowell. This course takes up the elements of patent law and is intended to give the student a guiding knowledge of the subject.



## CHEMISTRY AND DYEING DEPARTMENT—C

### Elementary Chemistry (Inorganic and Organic Chemistry)—C-1

Instruction in Elementary Chemistry extends through the first year and includes lectures, recitations, and a large amount of individual laboratory work upon the following subjects:

#### *Chemical Philosophy*

Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formulas, valence, periodic law, etc.

#### *Non-Metallic Elements*

Study of their occurrence, properties, preparations, chemical compounds, etc.

#### *Metallic Elements*

Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up as thoroughly as the time will permit the qualitative detection of the more common metals and non-metals, with practical work.

#### *The Hydrocarbons and their Derivatives*

Study of their occurrence, properties, preparations and uses. This work although elementary in character is of sufficient breadth to prepare the student understandingly for the work with the artificial dyestuffs which follows.

[ALL COURSES]

### Qualitative Analysis—C-2

PREPARATION: C-1 TAKEN SIMULTANEOUSLY

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations, and laboratory work. The student must become familiar with the separations and the detections of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys, and pigments. At intervals during the term, short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments, and the various dyeing reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of Quantitative Analysis, such as the precipitation and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.



A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[COURSES IV-4, IV-3]

### **Stoichiometry—C-3**

PREPARATION: B-1

This subject is taken during the second half of the first year and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied, and problems are worked involving the expansion and contraction of gasses, determination of empirical formulae, combining volume of gasses and quantitative analysis.

[COURSES IV-4, IV-3]

### **Advanced Inorganic Chemistry—C-4**

PREPARATION: C-1

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first year course in General Chemistry.

[COURSES IV-4, IV-3]

### **Advanced Organic Chemistry—C-5**

PREPARATION: C-1

In this course which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as the time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the time being devoted to the benzene series. The aim of the course is to lay a broad foundation for the study of the Chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds in order to become familiarized with equation writing.

[COURSES IV-4, IV-3]

### **Quantitative Analysis—C-6**

PREPARATION: C-2, C-3

During the second year, the principles of analytical work are thoroughly taught, the work being based on Talbot's Quantitative Chemical Analysis. Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include salts, ores, minerals, bleaching powder and alkalies. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[COURSES IV-4, IV-3]

### **Quantitative Analysis—C-7**

PREPARATION: C-6

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin, and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums, and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[COURSES IV-4, IV-3]

### **Physical Chemistry—C-8**

PREPARATION: C-4, C-5, B-II

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[COURSES IV-4, IV-3]

### **Textile Chemistry and Dyeing—C-9**

PREPARATION: C-I, B-3, B-7

The outline of the lecture course which is given through the second year is as follows:

#### *Technology of Vegetable Fibres*

Cotton, Linen, Jute, Hemps, China Grass. Chemical and physical properties, chemical composition, microscopical study, and their action with chemicals, acids, alkalies and heat.

#### *Technology of Animal Fibres*

Wool, Mohair, Silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

#### *Technology of Artificial Fibres*

Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

### *Operations Preliminary to Dyeing*

Bleaching of cotton and linen, wool scouring, bleaching, fulling and felting of wool, carbonizing, silk scouring and bleaching, action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in emulsive wool scouring process and their action upon the fibre under various conditions; also the most successful of the solvent methods for degreasing wool.

### *Water and its Application in the Textile Industry*

Impurities present, methods for detection, their effect during the different operations of bleaching, scouring, dyeing and printing, and the methods for their removal or correction.

The important subject of boiler waters is also studied under this heading with a full discussion of the formation of boiler scale, its disastrous results and the methods by which it may be prevented.

### *Mordants and Other Chemical Compounds used in Textile Coloring not Classified as Dyestuffs*

Theory of mordants, their chemical properties and the application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, levelling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under the heading are included the definitions of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and levelling agents.

### *Theory of Dyeing*

A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

### *Natural Organic Coloring Matters*

Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used within recent years by textile colorists.

### *Mineral Coloring Matters*

Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

### *Artificial Coloring Matters*

General discussion of their history, nature, source, methods of manufacture, methods of classification, and their application to all fibres.

Special study of:—

Basic Coloring Matters.

Phthalic Anhydride Colors, including the eosins and phloxines.

Acid Dyestuffs.

Janus Colors.

Direct Cotton Colors.

Sulphur Colors.

Mordant Colors, including the alizarines and other artificial coloring matters requiring metallic mordants.

Mordant Acid Colors.

Insoluble Azo Colors, developed on the fibre.

Reduction Vat Colors.

Aniline Black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

### *Machinery used in Dyeing*

A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams, and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the School and the students can be taken directly from the lecture room and shown the machines in actual operation.

[ALL COURSES]



## **Dyeing Laboratory—C-10**

### **PREPARATIONS C-9 TAKEN SIMULTANEOUSLY**

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required material, but from time to time students are required to dye larger quantities, in the full sized dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full sized dyeing machines and vats, the practical side of the subject is studied. It is the constant endeavor of those in charge, to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[COURSES IV-4, IV-3]

## **Dyeing Laboratory—C-11**

### **PREPARATION: C-9 TAKEN SIMULTANEOUSLY**

This course in general laboratory work in Textile Chemistry and Dyeing is given during the second term of the second year. It is so arranged as to acquaint the student with the properties of the fibres, mordants and coloring matters, and their application in the Textile Industry.

[COURSES I-3, II-3, III-3]

## **Industrial Chemistry Laboratory—C-12**

### **PREPARATION: C-1**

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the second year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully



with the view of producing as great and pure a yield of each substance as possible. Industrial Chemistry not only involves the application of the principles of both inorganic and organic chemistry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds) making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process with the object of producing as near the theoretical yield as possible. The student is charged with the amount of raw material at market prices, and the finished product is bought back by the school.

Recently much new apparatus has been added to the industrial chemistry laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[COURSES IV-4, IV-3]

### **Industrial Chemistry**

#### **Lecture—C-13**

PREPARATION: C-4, C-5, C-12

During the whole of the third year, lectures and recitations are held in Industrial Chemistry, the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and coal tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powder, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[COURSES IV-4, IV-3]

### **Advanced Textile Chemistry and Dyeing—C-14**

PREPARATION: C-9, C-10

This is a continuation of the Textile Chemistry and Dyeing of the second year and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and in addition the following subjects:—

#### *Classification and Construction of Artificial Dyestuffs*

A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

### *Color Matching and Color Combining*

A study of that portion of physics which deals with color, and the many color phenomena of interest to the textile colorist, and lecture work being supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist and the results of combining colored lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics are discussed under this heading.

Each student's eyes are tested for color blindness early in the course in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color-work and color matching may be performed.

### *Dye Testing*

This subject includes the testing of several dyestuffs of each class, to all the common color destroying agencies, the determination of their characteristic properties and their action towards the different fibres, also the determination of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card which furnishes a permanent record of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalies.

### *Union Dyeing*

A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials with the production of solid and two color effects.

### *Textile Printing*

A thorough study of the whole subject of textile printing, each student being required to individually produce no less than twenty different prints including the following styles:—Pigment style, direct printing style, steam style with tannin mordant, steam style

with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied, also the precautions which must be considered in its use and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon the manufacturing scale as well as experimentally in the laboratory.

#### *Cotton Finishing*

A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, mercerizing, beetling, and filling, and the various machines used for carrying out these processes.

#### *Mill Visits*

During the third and fourth years, visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

[COURSES IV-4, IV-3]

#### **Organic Chemistry Laboratory—C-15**

This course, while including practice in the usual methods of organic analysis and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dye-stuffs. The student not only prepares many of the representative dye-stuffs, but what is far more important, he carries out all the operations beginning with coal tar itself. Thus instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar and makes his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory and an excellent opportunity is presented for original work.

[COURSE IV-4]

#### **Engineering Chemistry—C-16**

PREPARATION: C-4, C-5, C-6

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils, and water from the chemical engineer's standpoint. The elements of Chemical Engineering are also considered to such an extent as time will permit.

[COURSES IV-4, IV-3]

### **Industrial Analysis—C-17**

#### **PREPARATION: C-6**

In conjunction with the lectures in Engineering Chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[COURSES IV-4, IV-3]

### **Microscopy and Photomicrography—C-18**

The value of the microscope in the detection and examination of the various fibres cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high grade microscopes, and not only have practice in the examination and detection of the fibres, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibres and the various slides which they may prepare. A special dark room has been provided for this purpose.

[COURSES IV-4, IV-3]

### **Advanced Dyeing Conference—C-19**

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper, upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is two fold. First to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others, and secondly of bringing before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[COURSE IV-4]

### **Advanced Organic Chemistry (Dyestuffs)—C-20**

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[COURSE IV-4]

### **Technical German—C-21**

This course consists of the reading of German technical literature with the object of familiarizing the student with the current German publications in Textile Chemistry and Coloring.

[COURSE IV-4]



## **Thesis—C-22**

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[COURSE IV-4]

## **TEXTILE DESIGN AND WEAVING DEPARTMENT—D**

### **Textile Design—D-1**

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves including figured and colored effects; producing chain and draw from design and vice versa; extending and extracting weaves.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3, III-3, VI-3, VI-4]

### **Decorative Art—D-1**

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term Freehand Drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The Engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing with reference to their application in textiles. Good examples of applied design in textiles as well as in other branches are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

### **Cloth Analysis—D-1**

In the first year this subject takes up in a systematic manner the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave, the amount and kind of yarns used and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are: reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibres; grading of yarns, folded, ply, novelty and fancy yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, weight of yarn required to produce a given fabric.

[FIRST YEAR—ALL COURSES]



### **Hand Loom Weaving—D-1**

During the first year the work in hand loom weaving is taken in connection with design and analysis and consists largely of picking-out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for dobby work.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3, III-3]

### **Textile Design—D-2**

FOR COTTON GOODS—PREPARATION: D-1

The work of the second year follows with consideration of fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same in to the loom. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[COURSES I-3, III-3, VI-4]

### **Textile Design—D-3**

FOR WOOLEN AND WORSTED GOODS

PREPARATION: D-1

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath-robcs, crepes, filling reversible, Bedford cords, imitation furs, crepons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics together with the consideration of the shrinkages, and dead loss in all fabrics, theory of diameter of yarns, costs of mixer and blends, is a part of this course.

[COURSES II-3, III-3, VI-4]

### **Decorative Art—D-4**

PREPARATION: D-1

The work of the second year is similar to that of the previous year, but is more advanced and specific. More original work is required as well as copying and composition work.

[COURSE III-3]

## **Hand Loom Weaving—D-5**

PREPARATION: D-I

In the second year, blanket, Jacquard and leno work are covered, and experiments are made with different weaves and fabrics.

[COURSE III-3]

## **Textile Design—D-6**

PREPARATION: D-2, OR D-3

The advanced work takes up the more complicated weaves adapted to harness work and leads into leno and Jacquard designs. The following is a brief list of the subject heads which will give some idea of the course: Double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholsteries, spot weaves, pile or plush, crepon, matelasse and its imitation, pique, Marseilles, quilting, miscellaneous designs for Jacquard, lenos, fustian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year; that of requiring the student to make original designs and to weave the same.

[COURSES I-3, II-3, III-3, VI-4]

## **Cloth Construction—D-7**

PREPARATION: D-2 OR D-3

The work includes the application of the different weaves and their combinations in the production of fancy designs, both modified and original, the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value, and the discussion of the breaking strengths of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject which is given by class room work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[COURSES I-3, II-3, III-3, VI-4]

## **Decorative Art—D-8**

PREPARATION: D-4

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third year course. It should be understood that work in Decorative Art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[COURSE III-3]

## Decorative Art for Special Students

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the Historic styles for all materials—wood, gold, silver, copper, brass, leather, fabrics, wall papers, and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

### Power Weaving—D-9

#### PREPARATIONS D-1. TAKEN SIMULTANEOUSLY WITH B-5

In connection with the work in Textile Design and Cloth Analysis practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects:

Loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, centre selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the course of weaving mechanism.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

### Power Weaving—D-10

#### PREPARATION: D-9; D-2 OR D-3

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions, lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

## LANGUAGE AND HISTORY DEPARTMENT—E

### English—E-1

PREPARATION: A-5

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the English course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition, and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[ALL COURSES]

### Elementary German—E-2

This course is intended for first year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

### Advanced German—E-3

PREPARATION: E-2

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[COURSES II-4, VI-4, IV-4]

### Elementary French—E-4

This course is intended for first year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in translation is acquired by a considerable amount of reading from general or scientific sources.

### Advanced French—E-5

PREPARATION: E-4

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[COURSES IV-4, VI-4]



## **Industrial History—E-6**

PREPARATION: A-6

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England, and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of today. The course consists of weekly lectures supplemented by text-book reading. Among the topics treated are: natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history, in order that he may have practice in research work and also may continue his training in English.

[ALL COURSES]

## **Economics—E-7**

PREPARATION: E-6

This course consists of lectures supplemented by recitations based upon both the lectures and a text book. The character of the course is descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are: the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest, and profits; business organization; value and price; monopoly; money, credit, and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[COURSES IV-4, VI-4]

## **COTTON DEPARTMENT—F**

### **Cotton Yarn Manufacturing—F-1**

PREPARATION: B-1, B-3, B-7

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows:



## *Fibre*

Before taking up the details of the operation of manipulating the fibre into yarn a careful study is made of the characteristics and classification, both botanically and commercially of the many varieties of the cotton fibre. Methods employed in cultivating, marketing, grading, and stapling are considered and under these heads a detailed study is made of the types of gin employed.

## *Opening and Picking*

Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments as fully as the manufacturing results accomplished by the machines. This includes such construction details as Evener, Lap Measuring and Safety Stop Motion, Grids, Cleaning Trunks, Beaters, etc., also operation details which involve the adjustment of waste, drafts and character of laps.

## *Carding*

The process of carding is considered one of the most important and proper time is devoted to the construction and operation of cards that the student will be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, forms a part of the work. The influence of faulty parts, defective conditions and their remedy are included.

## *Drawing*

Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and evener motions.

## *Roving Processes*

Under this head is studied the various machines known as the Slubber, Intermediate, Fine and Jack Fly Frames. The relative motion of the various parts of these machines are so complex that a good opportunity is here presented to fix in the student's mind the application of certain mechanical principles that have use in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering and under this head is taken up both the Metric and English systems.

## *Ring Spinning and Twisting*

The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts

of draft and twist provided, correct size of rings and travellers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

### *Mule Spinning*

This method of spinning is very different from that of the ring frame and the mechanical details are more complicated. The student is furnished with new means of producing yarns and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the Drawing, Twisting, Backing Off, Winding, together with special motions and devices as are used upon the modern mule.

### *Combing*

This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whitin and Nasmith Combers.

### *Organization*

Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading is also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

## WOOLEN AND WORSTED YARNS—G

### Manufacturing—G-1

PREPARATION: B-1, B-3, B-7

### *Raw Materials*

A study of raw materials which enter into the manufacture of woolens or worsted yarns or are made into yarns by processes similar to those employed in the manufacture of woolen and worsted yarns, would include silk, Mohair, Alpaca, Vicuna, Cashmere, Camel's Hair, Cotton, Flax, Hemp, Jute and Ramie. In connection with these are considered Shoddy, Noils, Mungo and Extracts.

### *Wool Sorting*

Familiarity with the various grades and kinds of wool, the physical and chemical structure is obtained by lecture and by actual sorting of fleece wool on the bench under the direction of an experienced wool sorter. The various characteristics, properties are explained, as are also trade terms such as Picklock XXX, XX,  $\frac{1}{2}$ -Blood,  $\frac{3}{8}$ -Blood,  $\frac{1}{4}$ -Blood, Delaine, Braid, etc. Some skill is acquired in the estimation of shrinkage, and in judging the spinning qualities.

### *Wool Scouring*

The object of scouring and the methods employed are explained and this involves the consideration of the soaps and chemicals used in washing, also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap, also tests are made to show this effect. At the same time the use of driers, their operation and regulation is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

### *Burr Picking, Mixing and Oiling*

In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of Mixing and Burr Pickers is made clear.

### *Carding*

The different systems of carding wool, depending upon whether it is to be made into woolen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool and the further manufacture of it into yarn serves to fix the principles of carding in the mind of the student, as well as gives him some skill in handling machinery. At the completion of this part of the work he is required to prepare and hand in a full description of the process of carding including working drawings, sketches, etc. to fully explain the machines and the methods.

### *Woolen Mule*

The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as for example, the Backing Off and Winding Motions, the Quadrant, Builder-rail, Faller Regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

### *Top Making and Combing*

This branch takes up, besides the carding of the wool on a worsted card, the preparing processes, also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures and by dismantling and assembling these machines in the laboratories. Later quantities of stock is made into top and then into yarn.

The Noble and Lister combs are studied and the various calculations to determine draft, noiling, productions, etc. are made.

### *Drawing and Spinning*

The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or Open Drawing System or by the French System. The process includes the various machines in the successive steps of making Bradford spun yarn and the functions of the different machines are studied. In the latter or French System the stock is run through the drawing machines and the roving spun into yarn on the French Mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford System is given work on the twistors and the effects that may be produced.

### *Organization*

At the end of the course the lay-out of a properly balanced yarn mill is studied and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[COURSES II-3, III-3, VI-3, VI-4]

### **Textile Testing—G-2**

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibres, yarns and fabrics. The application of physical laws and methods of measurements as studied in the course of Physics are used in the study of physical characteristics of textile material. The work is given to students in advanced courses and consists of lecture and laboratory work. Reports are prepared from each experiment giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may acquire practice and understand the interpretation of data. A special testing laboratory has recently been constructed and a considerable number of the best standard fibre, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant so that tests can be made under uniform or standard conditions of humidity and temperature.



**FINISHING DEPARTMENT—H**  
**Woolen and Worsted Finishing—H-1**

PREPARATION: C-I, D-I, D-9

The outline of this course which is given by means of lecture and laboratory work is as follows:

*Burling and Mending*

Under this head is taken up for consideration the examination of flannel as it comes from the loom, the construction, use, and location of the perch, the methods used in marking defects, measuring, weighing, and numbering of cloths, also the methods of inspection for fancies, single cloths, and double cloths. The object of burling, mending, and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

*Fulling*

This branch covers a study of the conditions of the flannel as it comes from the loom, the influence of oil, size, etc. upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressures of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls, and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali, and acid is considered as well as the hygroscopic and felt-ing properties of different wool fibres. The preparation of the flannel for the mill and the usual methods of determining shrinkages as well as the various methods of soaping are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt as well as the determination of the proper amount of alkali for various goods are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz.: all wool, shoddies, and mixed goods, is studied in class room and by operation in the mill.

The change in weight and strength for each operation are carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet are considered in



both class and machine rooms. In each operation the defects likely to materialize are studied as well as the cause thereof, and various methods of modifying or lessening them.

### *Washing and Speck Dyeing*

This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions, and sours, on the different kinds of goods is made clear by practical work in the machine room, where the effects due to improper scouring such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters and includes methods of preparation, materials used, application and tests required.

### *Carbonizing*

This is an important branch of finishing and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

### *Gigging, Napping and Steaming*

The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines, is discussed and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining lustre and the production of permanent finish are considered in connection with steaming and sponging.

### *Brushing, Shearing and Pressing*

This includes as do the other branches a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. With the manipulation of the shear comes the matters of setting, grinding, and adjustment. With the brushing machine the effect of steaming and moisture upon the lustre and feel of the goods is shown. A study of the action of the presses both plate and rotary involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[COURSES II-3, III-3, VI-3, VI-4, IV-4]

## Cotton Finishing—H-2

PREPARATION: C-1, D-1, D-9

The outline of the course in the Finishing of Cotton Fabrics is as follows:

### *Cloth Room*

Instruction of the various goods and the object thereof. Construction of the various types of inspecting and trimming machines.

### *Shearing*

The object. A consideration of the various types of shears for treating one or both sides at the same time, also the use of the usual cleaning devices, such as emery, sand, and card rolls, beaters and brushes. Grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices, and calender attachments for grey goods.

### *Singeing*

Developing and object of singeing. The construction of singers of all types, and for various purposes. The use of cooling tanks, steaming-devices, rolling and brushing attachments.

Regulation of the flame for various goods and adjustment of the parts. Gas and air pressure, water cooled rolls. The effect of moisture on the cost of singeing. The use of dry cans in connection with singeing. Electric singeing.

### *Washing*

Open width and string washers. Their construction and operation. Soaps, temperature, squeeze rolls. Washing of various goods and the object thereof. Stains.

### *Napping*

The object of napping and the usual method of treating goods. Various types of nappers—Single and Double acting, Felting nappers. Construction, grinding, and adjustment of various types.

### *Water Mangles*

Their object and the construction of various types. Various rolls, iron, husk, etc. Scutchers: their object and constructions.

### *Starch Mangles*

The object and construction of all types of starch mangles for pure starch and filled goods. Various types of rolls, brass, rubber, wood. Action of doctor blades, etc. Regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener, and fillers. The preparation of starch and various methods of application.

### *Dryers and Stretchers*

Both horizontal and vertical, tenter frames, clips. The swing motion and the finishes thus produced. Construction. Spraying machines, belt stretchers, button breakers. Their object and construction.

### *Calenders*

The object and construction of all types, including the regulation of pressure and nips for the production of various finishes. Various types of rolls and their uses, steel, husk, and paper. The use of hot and cold rolls. Chasing, friction, embossing and Schrier calenders, and the various finishes produced by each. Production of watered effects. Beetling machines.

Making up room—yarding, inspecting. Different types of folds. Pressing, papering, marking.

[COURSES I-3, VI-3, VI-4]

## PHYSICAL CULTURE—I-1

This subject is required of all students registered for first year work. The course consists of general athletic exercises with small squads on the campus during the pleasant weather of the fall and spring, and exercises in the school gymnasium during the winter months. The instruction is given by the director of physical culture. Previous to the commencement of the work in the fall, each member of the class is required to submit to a thorough physical examination, a careful record of which is kept. Again at the end of the year another examination is held that progress may be noted.

The student's record depends both upon his regularity of attendance and upon the character of his work. A student who is not regular in attendance or who does not make sufficient progress in the work will be required to repeat the subject during the second year.

[ALL COURSES]

## Evening Classes

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### ENTRANCE REQUIREMENTS AND FEES

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a Grammar School are admitted upon certificate. A blank form for this will be found in the back of the catalogue. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the three weeks previous to the opening of the evening school.

All students whether from Lowell or elsewhere taking courses in the Chemistry and Dyeing Department must before entering the laboratory make a deposit as follows:

Course IVa	\$ 5.00 per year
Course IVb, IVc or IVd	\$10.00 per year

This is to cover the cost of laboratory breakage and chemicals, and at the end of the year any unexpended balance is returned or an extra charge made for excess breakage.

The evening classes usually commence in the month of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses. The schedule showing the arrangements of classes for each term will be announced at the beginning of the school year.



Before entering class all students must fill out an attendance card which can be obtained at the office or from the instructors in the various departments. Any student who has filed an attendance card and who wishes to change his course, should notify the office to that effect.

## COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

No certificate will be awarded until all dues to the school have been discharged.

### 1. Cotton Spinning—2 Years

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he



is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make himself a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

**Ila. Woolen Spinning—2 Years**

**Ilb. Worsted Spinning—3 Years**

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

**IIla. Textile Design—3 Years**

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in

the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

### **IIIb. Freehand Drawing—3 Years**

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

#### **IVa. Elementary Chemistry—2 years**

General Chemistry including Inorganic and Organic. Qualitative Analysis.

#### **IVb. Textile Chemistry and Dyeing—3 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.

#### **IVc. Analytical Chemistry—3 years**

Laboratory Work and Lectures in Quantitative Analysis.

#### **IVd. Textile and Analytical Chemistry—4 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

- Va. Cotton Weaving—1 year**
- Vb. Woolen and Worsted Weaving—1 year**
- Vc. Dobby and Jacquard Weaving—1 year**

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

- VIa Elements of Engineering—3 years**
- VIb. Mechanical Drawing—3 years**
- VIc. Machine Shop Practice—2 years**

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one

year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

## **VII. Woolen and Worsted Finishing—1 year**

In this course machine work is supplemented by lectures and discussions pertaining to the many finishes given to woolen and worsted fabrics. The action of soaps, water, steam, heat and cold upon wools in cloth or the combination of this fibre with others used in commerce is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics.



## OFFICERS OF ADMINISTRATION AND INSTRUCTION

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### Principal

CHARLES H. EAMES, S. B., Massachusetts Institute of Technology, 1897. Active member of The American Society of Electrical Engineers. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell, and engineer with Stone and Webster, electrical engineers, Boston, Mass.

### Instructors

#### TEXTILE ENGINEERING

GEORGE H. PERKINS, S. B., chief instructor. Massachusetts Institute of Technology, 1899. Associate member American Society of Mechanical Engineers. Experience: Draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood Greene and Co., Boston, Mass.

HERBERT J. BALL, S. B., instructor in mechanical engineering. Massachusetts Institute of Technology, 1906. Experience: Draftsman, Watertown Arsenal.

ULYSSES J. LUPIN, S. B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

DAVID M. HUNTING, A. B., S. B., assistant instructor in mechanical drawing. Harvard College, 1904; Massachusetts Institute of Technology, 1912.

CHARLES H. JACK, instructor in machine shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

MARCUS J. COLE, instructor in mechanical drawing. Evening School. Massachusetts Institute of Technology, 1909. Experience: Bigelow-Hartford Carpet Co., Lowell, Mass., Engineering Department.

#### CHEMISTRY AND DYEING

LOUIS A. OLNEY, S. B., M. S., chief instructor. Lehigh University, 1896. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

HOWARD D. SMITH, PH. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor Brown University and Tufts College; instructor Beloit College, Wisconsin.



- ROBERT R. SLEEPER, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz and Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- BERTRAND F. BRANN, S. B., M. S., instructor in chemistry. University of Maine, 1909. Massachusetts Institute of Technology, 1912. Experience: Instructor at University of Maine; Assistant Instructor Department of Research, Massachusetts Institute of Technology.
- RUSSELL B. STODDARD, A. B., instructor in chemistry. Clark College, 1912.
- WARREN H. WHITEHILL, assistant instructor in chemistry. Lowell Textile School, 1912. Experience: Chemist, Brewer & Co., Worcester, Mass.; Dyeing Department, Stirling Mills, Lowell, Mass.
- GEORGE O. RICHARDSON, assistant instructor in dyeing. Lowell Textile School, 1916.

#### TEXTILE DESIGN AND WEAVING

- HERMANN H. BACHMANN, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company, and Smith Webbing Company, Pawtucket, R. I.
- STEWART MACKAY, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- JOSEPH WILMOT, instructor in power weaving and warp preparation. Lowell Textile School, 1908. Experience: United States Bunting Company, Lowell, Mass.; Draper Company, Hopedale, Mass.; Crompton and Knowles Loom Works, Worcester, Mass.
- ANDREW YOUNGER, instructor in Design and Weaving Department. Lowell Textile School, Evening Class, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Co., Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woolen Co., Dedham, Mass.; C. A. Root Mfg. Co., Uxbridge, Mass.
- E. ELIZABETH WHITNEY, instructor in freehand drawing. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching eighteen years.

#### COTTON YARNS

- STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.
- HENRY K. DICK, instructor in cotton spinning and knitting. Experience: Linnville Hosiery Factory, Lanark, Scotland.
- GEORGE GOODCHILD, instructor in cotton spinning, Evening School. Lowell Textile School, 1903. Experience: Draftsman, Saco-Lowell Shops Lowell, Mass.

#### WOOLEN AND WORSTED YARNS

EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.

JOHN N. HOWKER, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from City and Guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Maine; Arlington Mills, Lawrence, Mass.

JOHN C. LOWE, instructor in woollen and worsted yarns. Lowell Textile School, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

#### FINISHING

ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Canada; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woollen and worsted yarns, Lowell Textile School.

#### LANGUAGES AND HISTORY

LESTER H. CUSHING, A. B., Harvard College, 1911.

#### PHYSICAL CULTURE

RALPH E. GUILLOW, physical director. International Y. M. C. A. Training School, Springfield, Mass., 1910. Ten years experience in physical culture in various schools and institutions.

ARCHIBALD R. GARDNER, M. D., medical adviser. Harvard University, 1902.

## ALUMNI ASSOCIATION

The Alumni Association of the School holds its annual meeting and banquet in Lowell on commencement day.

The membership of the Association is restricted to graduates of the day school. Honorary membership is open to the Board of Trustees, the Faculty and such others as may be elected by the Association.

The officers for the year 1916 are:

President:	Charles E. Sylvain, '13
Vice-President:	William L. Parkis, '09
Secretary-Treasurer:	Arthur A. Stewart, '00

Board of Directors: The President, Vice-President, Secretary-Treasurer, Henry A. Bodwell, '00, for one year, and Stephen E. Smith, '00, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

## ENTERTAINMENT COMMITTEE

Robert R. Sleeper, <i>Chairman</i>	Royal P. White
Everett B. Rich	George L. Gahm

## OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

## OFFICERS

President:	Harry Buckley, Methuen, Mass.
Vice-President:	James Spurr, Lawrence, Mass.
Secretary and Treasurer	Stephen W. Bastow, Nashua, N. H.

## BOARD OF CONTROL

President, Vice-President, Secretary, also John Nicoll, Andover, Mass., H. Stewart Redman, Lowell, Mass., Harry Buckley of Methuen, Mass., Samuel Stott, Methuen, Mass.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

For information regarding this association please apply to Stephen W. Bastow, Secretary, 90 Abbott St., Nashua, N. H.

## DAY CLASS OF 1914

### Graduates with Titles of Theses

Degrees conferred as follows June 5, 1914:

Alexander Duncan Davis	Bachelor of Textile Engineering Thesis 1913	Lowell, Mass.
Chester Temple Horton	Bachelor of Textile Engineering Thesis 1913	Wilmington, Mass.
Harold Watson Leitch	Bachelor of Textile Dyeing "A New Qualitative Test for Silicates in Soap"	No. Andover, Mass.
Ernest Dean Walen	Bachelor of Textile Engineering Thesis 1913	Gloucester, Mass.

Diplomas awarded as follows June 5, 1914:

Parker Gould Blake,	Textile Engineering Thesis with R. T. Fisher and H. P. Tucker "Economy Tests of a 25 K. W. Kerr Turbo-Generator"	Cambridge, Mass.
Raymond Frost Bradley	Textile Engineering "An Analysis of the Power Requirements of a Knowles Worsted Loom"	Gloucester, Mass.
Raymond Calvin Brickett	Wool Manufacturing "The Manufacture of a Worsted Suiting"	Haverhill, Mass.
Guy Talbot Creese	Chemistry and Dyeing "Birch Oil"	Danvers, Mass.
Clinton Lamont Dorr	Textile Engineering "An Investigation of the Vibration and Oscillation of a Mill Building"	Malden, Mass.
Russell Todd Fisher	Textile Engineering Thesis with P. G. Blake and H. P. Tucker	Gloucester, Mass.
Marvin Hale Lillis	Chemistry and Dyeing "Relative Value of Glauber's Salt and Common Salt and the Influence of Soda Ash in the Dye Bath during the Application of Direct Cotton Colors"	Lawrence, Mass.
Frank Robert McGowan	Textile Engineering "Comparative Power Tests of a Shoddy Picker with Plain and Ball Cylinder Bearings"	Lowell, Mass.



## EVENING CLASS OF 1914

Certificates awarded as follows, May 6, 1914:

### COURSE Ia—2 YEARS. (Cotton Spinning)

Hammond Barnes	Lowell, Mass.
Albert Haithwaite	" "
Louis Carleton Playdon	Lawrence. "

### COURSE Ia—3 YEARS. (Cotton Spinning)

George Henry Cooper	Lowell, Mass.
Edward James Cox	" "
Lloyd Andrew Kirkpatrick	" "

### COURSE IIb—3 YEARS. (Worsted Spinning)

Frank Campling	Methuen, Mass.
Harold Edward Leaver	Lawrence, "
Forrest Frew Macnee	Lowell, "
Hartman Frank Schmidt	Lawrence, "
Roscoe Comee Turner	Lowell, "

### COURSE IIIa—3 YEARS. (Textile Designing)

Edward Everett Bixby	Lowell, Mass.
Martin Francis Dowd	Lawrence, "
John Joseph Henzie	Lowell, "
Bruce Hill	Methuen, "
Charles Philip Horman	Lowell, "
Joseph Edward Leith	" "
Clarence Philip Mack	Lawrence, "
Alfred Roesler	" "

### COURSE IVa—2 YEARS. (Elementary Chemistry)

Frederick Anthony Alter	Lawrence, Mass.
William Francis Brandy	" "
John Henry Clark	" "
William Cochrane	Lowell, "
Harry Irving Emmons	Lawrence, "
Gardner George Gill	Lowell, "
Winfield Scott Hanson	" "
Alexander Thomas Herron	Lawrence, "
Arthur Oscar Johnson	" "
Frank Edward LaPrise	Lowell, "
Lewis Nathan Mears	Ballardvale, "
Ernest Francis Stokham	Lowell. "

### COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)

Ralph William Freeman	Lowell, Mass.
Samuel Jennings Nichol	" " "

### COURSE Va—1 YEAR. (Cotton Weaving)

Hammond Barnes	Lowell, Mass.
John Edwin Boyle	" "
Andrew Haldane	Lawrence, "
Gustav Frederick Herbst	Lowell, "
John Howker	" "
John Francis MacDonald	Woburn, "
John George Parker	Lowell, "
Wilfrid Pickles	Lawrence, "
Samuel Adams Steere	Lowell, "
George Stewart	" "



**COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)**

Albert Bakewell	Lowell, Mass.
John Nason Hammond	North Andover, "
Albert Ernest Hartwig	Lawrence, "
Walter Jerome Jackson	" "
Harry Freer Lowe	Lowell, "
Aram Arthur Milot	" "
Gordon James Pierce	" "
Robert Hume Redpath	Lawrence, "

**COURSE Vc—1 YEAR. (Dobby and Jacquard Weaving)**

Frank Edward Learned	Methuen, Mass.
George Anthony Looby	Lowell, "
Joseph Mahoney	" "

**COURSE VIa—3 YEARS. (Elements of Engineering)**

James Henry Brown	Forge Village, Mass.
Leon Eugene Brown	Lowell, "
Frank Collins	Forge Village, "
James Joseph Gibbons	Lawrence, "
Edward Thurston Gilman	Lowell, "
Charles Sumner Lewis	" "
Leonard Smith	Methuen, "

**COURSE VIb—3 YEARS. (Mechanical Drawing)**

Richard Leo Burns	Lowell, Mass.
William Edward Donahue	" "
Sydney Herbert Hall	" "
Charles Hadley Huse	" "
Erick Thursten Lawrence Laurin	" "
Fernald Hobart Nichols	" "
Frederick Aloysius O'Brien	" "
Mansfred Monson Pihl	" "
Francis Edward Rouine	" "
Henry Kane Torpey	" "

**COURSE VIc—2 YEARS. (Machine Shop Practice)**

John William Delderfield	Lowell, Mass.
Charles Warren Howe, Jr.	" "
Arthur Kent	" "
Claude Rudolph McElroy	" "
Frank Joseph Mullen	" "
Banford Oulton Pinkham	Andover, "
Hugh Twomey	Lowell, "

**COURSE VII—1 YEAR. (Woolen and Worsted Finishing)**

Charles Henry Giffin	Lowell, Mass.
George Richard Giffin	" "
Edward Francis Hannagan	Lawrence, "
Paul Hill	" "
Thomas William Linehan	" "
Harry Allan Luce	Lowell, "
Duncan Haldane Pierce	" "
Hartman Frank Schmidt	Lawrence, "
Eugene Perley Woodbury	" "
Andrew Younger	Lowell, "

# REGISTER OF DAY STUDENTS 1914 - 1915

## Fourth Year

Name	Course	Address
Cosendai, Edwin F. E.	IV-4	Lowell, Mass.
Lane, Oliver F.	IV-4	" "
McGowan, Frank R.	VI-4	" "
Neyman, Julius E.	IV-4	" "
Rich, Edward	IV-4	" "
Richardson, George O.	IV-4	Andover, "
Sawyer, Joseph W.	IV-4	Lawrence, "
Tucker, Harold B.	VI-4	Stoneham, "

## Third Year

Adams, Floyd W.	VI	Lowell, Mass.
Alliot, Eric	I	Passaic, N. J.
Carlson, Ernest B.	VI	West Chelmsford, Mass.
Colby, Lawrence W.	IV	*Andover, "
Coleman, Wesley D.	IV	Cambridge, "
Echmal, John G.	VI-4	Lowell, "
Farnsworth, Harold V.	VI-4	Winchester, "
Ford, Austin L.	II	Lowell, "
Forsaith, Ralph A.	VI	Nashua, N. H.
Goodell, Josiah B.	II	Lowell, Mass.
Harrington, Thomas	IV	Cambridge, "
Harvey, Wendell P.	IV	Lowell, "
Holt, Justin G.	I	Somerville, "
Howarth, Charles L.	IV	Lowell, "
Irvine, James A.	VI	Chicago, Ill.
Kirby, Donald T.	IV	Lowell, Mass.
Lamprey, Leslie B.	IV	Lawrence, "
Milot, Aram A.	III	Taunton, "
O'Brien, Philip F.	II	Wayland, "
Putnam, George I.	IV	Boston, "
Riggs, Homer C.	VI-4	Essex, "
Sanborn, Ralph L.	VI-4	West Kennebunk, Me.
Takahashi, Gentaro	Sp.	Agatsuma-Gumaken, Japan

## Second Year

Albrecht, Charles H.	IV	Dorchester, Mass.
Baker, William J.	IV	Groton, "
Barlofsky, Archie	VI	Lowell, "
Barnes, Hammond	I	" "
Billings, Howard	IV	Concord Junction, "
Brearley, Earl B.	IV	Lowell, "
Colby, James T.	VI	Manchester, N. H.
Cox, James W., Jr., M. E.	Sp. II	Albany, N. Y.
Cubberly, Norman P.	VI-4	Malden, Mass.
Cummings, Edward S.	VI	Lowell, "
Davieau, Alfred E.	VI	Cochituate, "
Deady, William F.	IV	Uxbridge, "
Finch, Cecil C.	II	Broadalbin, N. Y.
Folkins, Ralph M.	Sp. III	Cambridge, Mass.
Foster, Boutwell H.	VI	Lowell, "

Name	Course	Address
Fuller, Allen R.	IV	Dorchester, Mass.
Garmon, Joseph P.	VI	Lowell, "
Gerrish, Henry K.	III	" "
Gilmore, Hazel S.	Sp. III	Newton Upper Falls, "
Harris, Lawrence R.	III	Greenwood, "
Heney, Fred C.	VI	Laconia, N. H.
Holden, Gladys M., A. B.	IV	North Billerica, Mass.
Lawrence, Harold E.	VI	Melrose, "
Lewis, Richard B., Jr.	III	Winthrop, "
Mehlman, Eliot L.	VI	Gloucester, "
Mitchell, Charles B.	III	Lowell, "
Molloy, Francis H.	II	Hudson, "
Morrill, Howard A.	VI	Lowell, "
O'Connor, Lawrence D.	VI	Woburn, "
Park, Kenneth B.	IV	Winchester, "
Peabody, Roger M.	II	Everett, "
Perlman, Samuel	IV	Lowell, "
Potter, Robert C.	IV	" "
Powers, Walter W.	IV	Boston, "
Purcell, James	IV	Webster, "
Racicot, Marie E.	Sp. III	Lowell, "
Schmidt, Hartman F.	Sp. III	" "
Scott, George W.	Sp. III	Andover, "
Shaber, Hyman J.	VI-4	Nashua, N. H.
Simpson, Kenneth M.	III	Malden, Mass.
Sjostrom, Carl G. V., Jr.	III	Ware, "
Sokolsky, Henry	VI	Lowell, "
Sturtevant, Albert W.	IV	" "
Tabor, James A.	II	Corinna, Me.
Tyler, Lauriston W.	II	Haverhill, Mass.
Wood, Lawrence B.	IV	Beverly, "
Woods, George W.	IV	Groton, "
Woods, Harvey A.	III	" "
Zia, Z. Zungtssoo, Chem. E.	I	Shanghai, China

### First Year

Allen, Horace R. B., A. B.	II	New York, N. Y.
Andrews, Henry B.	II	Hingham Centre, Mass.
Armstrong, Elias B., A. B.	Sp. II	Waltham, "
Ashworth, Ralph W.	II	Charlton City, "
Berry, Wilbur F.	II	Worcester, "
Brainerd, Walter E.	IV	Bradford, "
Byers, George E., A. B.	Sp. III	North Andover, "
Clark, Earl W.	IV-4	Salem Depot, N. H.
Darrin, Erwin N.	VI	Corning, N. Y.
Dennett, Mahlon W.	IV	Winchester, Mass.
de Sa, Francisco	VI-4	Bahia, Brazil
Dimock, Dwight L.	IV-4	Billerica, Mass.
Dover, Henry H.	II	Winchester, "
Evans, Albert H.	VI-4	Lowell, "
Fendel, Frank	IV	Boston, "
Finnell, Norman C.	VI-4	Cambridge, "
Fitzgerald, John F.	IV	Woburn, "
Gottesman, Louis	IV	Roxbury, "
Gunning, Alfred J.	II	Franklin, "
Hart, Arthur N.	IV	Lowell, "

Name	Course	Address
Heiser, Jerome M.	II	Lowell, Mass.
Hockmeyer, Clive E.	IV	" "
Holden, Harold H.	IV	Fitchburg, "
Johnson, George H.	IV-4	Haverhill, "
Lee, Harry C.	Sp.	Lowell, "
Libbee, George C.	IV-4	" "
Love, George J.	IV-4	" "
Loverin, Maitland C.	III	Tilton, N. H.
McCarthy, Joseph H.	—	Winchester, Mass.
Macdonald, Hector G.	IV-4	Beverly, "
McGowan, John P.	I	Lowell, "
Meekins, Jasper A.	I	North Adams, "
Merrill, Gilbert R.	VI-4	Lowell, "
Messer, Raymond B.	VI	" "
Moore, William J.	IV	Lawrence, "
Morris, Merrill G.	IV	Lowell, "
Palais, Samuel	IV	Roxbury, "
Parker, Hubert F.	VI	Norwood, "
Roberts, Roscoe O.	I	Fries, Va.
Rooney, Henry T.	IV	Lawrence, Mass.
Rowell, John I.	I	Manchester, N. H.
Shine, Timothy C.	IV-4	Lawrence, Mass.
Smith, LeRoy B.	II	Woonsocket, R. I.
Stevens, Raymond R.	IV-4	Dracut, Mass.
Stiegler, Harold W.	IV-4	Lawrence, "
Sullivan, Joseph I.	II	Everett, "
Sunbury, Herbert E.	VI-4	Wamesit, "
Sutton, Leslie E.	I	Great Barrington, "
Sydeman, William R.	IV	Lowell, "
Zimmermann, Alexander	VI	New York, N. Y.

# REGISTER OF EVENING STUDENTS

1914 - 1915

## Explanatory Note

Course Ia Cotton Spinning  
 Course Ib Knitting  
 Course IIa Woolen Spinning  
 Course IIb Worsted Spinning  
 Course IIIa Designing  
 Course IIIb Freehand Drawing  
 Course IVa Elementary Chemistry  
 Course IVb Textile Chemistry and Dyeing  
 Course IVc Analytical Chemistry  
 Course Va Cotton Weaving  
 Course Vb Woolen and Worsted Weaving  
 Course Vc Jacquard Weaving  
 Course VIa Elements of Engineering  
 Course VIb Mechanical Drawing  
 Course VIc Machine Shop  
 Course VIe Mathematics  
 Course VII Woolen and Worsted Finishing

## Post Graduates

Name	Course	Address
Blanchette, Eugene	IIIb	Lowell, Mass.
Delderfield, John W.	VId	" "
McGurn, James P.	VId	" "
Twomey, Hugh	VId	" "

## Third Year

Name	Course	Address
Abbott, George E.	IIb	Lawrence, Mass.
Atkinson, Harry	IIIa	Lowell, "
Ballinger, Raymond F.	VIb	North Chelmsford, "
Birdsall, James E.	IIb	Lawrence, "
Boone, Henry E.	VIa	" "
Bordeleau, George A.	IIIb	Lowell, "
Bradley, James A.	VIa	Tewksbury, "
Branch, Guy E.	IIb	Lawrence, "
Brown, Clifford	VIa	Lowell, "
Butland, Ralph A.	IIb	Lawrence, "
Campbell, Charles F. P.	IIIb	Lowell, "
Campbell, Thomas J.	IIIb	" "
Carman, James	VIa	" "
Chase, Frank P.	VIa	" "
Cinqmars, Adelard D.	VIa	" "
Colpitts, Stephen S.	VIa	Chelmsford, "
Dick, Hugo P.	Ia	Lowell, "
Dubois, Ubaldo E.	VIb	" "
Early, William E.	VIb	" "
Egan, John W.	VIb	" "
Everett, Kenneth C.	VIa	" "
Faneuf, George J.	VIb	" "
Fernley, Bert D.	VIb	" "



Name	Course	Address
Flanders, Paul G.	VIa	Lowell, Mass.
Flemings, Lester A.	Ia	" "
Ford, Joseph L.	IIIa	Lawrence, "
French, George W., Jr.	IIIa	" "
Gaudette, Eugene O.	VIb	Lowell, "
Gearin, John W.	VIb	" "
Genest, Henry	VIa	" "
Goddard, Harold W.	VIb	Methuen, "
Gorrie, John F.	VIa	Andover, "
Gustafson, Alfred L.	VIa	Lowell, "
Haithwaite, Albert	Ia	" "
Hanley, Edward T.	IIB	Forge Village, "
Hashmatian, Harry	IIIb	Lowell, "
Haslam, Albert H.	Ia	" "
Jackson, Charles F.	VIb	North Andover, "
Jackson, Walter J.	IIIa	Lawrence, "
Keables, Austin D.	Ia	Lowell, "
Kirkpatrick, Albert A.	IIIa	" "
Kyle, George S.	Ia	" "
Langevin, George F.	VIb	" "
Leather, Seward S.	IIB	Methuen, "
Lees, William H.	IIIa	Lowell, "
Leland, Raymond C.	VIb	" "
Leonard, Charles W.	IVb	" "
Luce, Harry A.	IIIa	" "
McCartin, Marietta L.	IIIa	" "
MacKenney, Harold E.	VIa	" "
McKittrick, Percy A.	VIa	" "
Maguire, James H.	IIB	" "
Marsden, Fred	IIIa	Lawrence, "
Merrill, Lester C.	VIb	Lowell, "
Molloy, Michael A.	VIa	" "
Moss, Joseph	Ia	" "
O'Neil, Walter E.	VIb	North Chelmsford, "
Plumer, Paul T.	IIIa	Lowell, "
Porter, William E.	VIa	" "
Potter, Frederick	VIa	" "
Regan, Joseph L.	VIb	" "
Richards, Raymond A.	IIIb	" "
Richardson, Wilbur S.	VIa	" "
Scully, Patrick F.	IIIa	" "
Shedd, Howard P.	IVb	" "
Simmers, Arthur A.	VIb	Lawrence, "
Smith, Mae V.	IIIb	Lowell, "
Smith, Miles H.	IIB	Lawrence, "
Spillane, James F.	VIa	Lowell, "
Stahl, Milton C.	IIB	Lawrence, "
Swanson, Victor E.	IVb	Lowell, "
Swift, John W.	IIB	" "
Taylor, Herbert C.	Ia	Waban, "
Walker, John J.	VIb	Lawrence, "
Walworth, Walter F.	VIb	Lowell, "
Weinhold, William F.	IIIa	Lawrence, "
Whitley, Arthur M.	IIB	Lowell, "
Wilder, Ralph S.	IIIa	Lawrence, "
Winslow, Warren A.	IIB	Ayer, "

## Second Year

Name	Course	Address
Allen, William J.	IVb	Lawrence, Mass.
Armstrong, John W.	IVa	Lowell, "
Arnold, Oscar W., Jr.	IIIa	Lawrence, "
Atkinson, Reginald C.	IVb	Lowell, "
Axelrod, Benjamin	VIa	Lawrence, "
Bonney, Nathaniel H.	IVa	" "
Brandy, William F.	IIa	" "
Burke, Frank J.	IIIa	Lowell, "
Burke, John J.	IVa	" "
Burns, Richard L.	VIa	" "
Caldwell, James	VIId	Andover, "
Campbell, Frank J.	VIIb	Lowell, "
Cardell, Roswell E.	VIIb	" "
Casavant, Elphege H.	VIId	Lawrence, "
Chapdelaine, Frank	VIa	Lowell, "
Charbonneau, Marie A.	IIIb	" "
Charlton, Harry F.	VIIb	Graniteville, "
Cheetham, James A.	VIa	Lowell, "
Cheyne, Hugh I.	IIb	" "
Coburn, Walter F.	VIIb	" "
Cochrane, John	IVa	" "
Crumbie, Charles	IIb	" "
Davis, Oscar H.	VIa	" "
Doole, James E.	IVa	" "
Dubois, Ubald E.	VIIb	" "
Early, William E.	VIa	" "
Egan, John W.	VIId	" "
Eichhorn, Paul A.	VIa	Lawrence, "
Fernley, Bert D.	VIId	Lowell, "
Fielding, Charles H.	VIIb	Chelmsford, "
Finch, Cecil C., M. E.	IIa	Lowell, "
Finn, David A.	IIIb	Lawrence, "
Fitzgerald, Thomas J.	Ia	Lowell, "
Flemings, Lester A.	Ia	" "
French, Walter B.	VIa	" "
Fuller, Edwin M.	Ia	" "
Gagnon, Arthur C.	VIId	" "
Gaudette, Eugene O.	VIa	" "
Gaulin, Gabriel A.	VIIb	" "
Gearin, George E.	VIIb	" "
Geary, John W.	IVa	" "
Gerry, Churchill	VIa	" "
Gile, Harold E.	IVb	Lawrence, "
Gilley, Frederic S.	IIIa	Somerville, "
Gorrie, James M.	VIa	Andover, "
Grant, Royal E.	VIa	Lowell, "
Greene, Irving A.	IVa	Lawrence, "
Hale, Frank O.	Ia	Lowell, "
Hall, Richard G.	Ia - VIa	" "
Halloran, Joseph M.	IVa	" "
Harris, George W.	IIIa	Lawrence, "
Hartnett, Michael J.	IVa	" "
Healy, Andrew J.	VIId	Lowell, "
Heath, Thomas A.	VIIb	" "
Heavey, Thomas J.	IVa	Tewksbury, "
Heiser, Jerome M.	IIIa	Lowell, "

Name	Course	Address
Heller, Frank M.	VIa	Lowell, Mass.
Henderson, George R.	IVa	" "
Hersom, Fred E., Jr.	VIb	Lawrence, "
Higginbottom, Harold J.	IVa	" "
Hopwood, Charles	Ia	Lowell, "
Howard, Herbert J.	VIa	" "
Howson, John S.	IVa	" "
Hynes, John M.	VIa	" "
Johnson, Alfred N.	VIb	" "
Jordan, Raymond	Ia	" "
Keleher, John L.	VIb	" "
Kelly, Thomas F.	IVa	" "
Kenyon, Herbert	Ia	" "
Kerrigan, Herbert T.	VIb	" "
Laporte, Elsie	IIIb	" "
Larue, Isabella G.	IIIb	" "
LaVigne, Andre J.	VIb	" "
Lawrence, Abbott	VIb	" "
Lee, Fitzhugh	IIIa	Lawrence, "
Lund, Stanley W.	VIb	" "
McGaunn, Charles	VIb	Lowell, "
McGaunn, Theodore	VIb	" "
McGee, David	IVc	" "
McGowan, Annie C.	IIIa	" "
McQuesten, John T.	IVa	" "
Matthews, Thomas E.	VIb	Lawrence, "
Merrill, Lester C.	VIb	Lowell, "
Metcalf, Sydney C.	VIb	Methuen, "
Morley, Ernest C.	IIb	Lawrence, "
Mosher, Chester L.	VIb	Lowell, "
Moss, Joseph	Ia	" "
Mountain, Everett R.	Ia	" "
Mungan, George F.	IIa-IIb	" "
Neel, Andrew, Jr.	IVa	Lawrence, "
Nicoll, James K.	VIb	Andover, "
Noonan, James J.	VIa	Lowell, "
O'Brien, Raymond L.	IVa	Lawrence, "
Obst, Ehrich	VIb	Methuen, "
O'Connor, Frank H.	Ia	Lowell, "
Ogden, Frank	IIIa	" "
Orr, William J.	IIIa	Andover, "
Ortel, Charles	VIa	Lowell, "
Owen, Frederick	IVa	" "
Parker, Elmer H.	VIb	Lawrence, "
Pendlebury, David	Ia	" "
Pendlebury, Harold	VIb	" "
Perron, Francis J.	IIIa	North Andover, "
Pike, Daniel P.	IVa	Wamesit, "
Pinkham, Banford O.	IIb	Andover, "
Playdon, Roy A.	IIb	Methuen, "
Poore, Herbert E.	IVa	Lawrence, "
Preble, George A.	IVa	Lowell, "
Racicot, Marie E.	IIIa	" "
Rhodes, William H.	IIIa	Lawrence, "
Rice, Henry H.	Ia	Lowell, "
Rodger, Thomas C.	IVa	" "
Schmidt, Hartman F.	IIa	" "

Name	Course	Address
Scott, George W.	IIIa	Lowell, Mass.
Shunny, John R.	VIb	" "
Simpson, Edwin P.	VIa	North Billerica, "
Smith, Gordon N.	IVa	Methuen, "
Smith, Leonard	VIb	" "
Snickers, Eugene	Ia	Lowell, "
Sorenson, David P.	IIIa	Dracut, "
Starkenber, Karl R.	IIIa	Lawrence, "
Stewart, George	VIa	Lowell, "
Stewart, Warren D.	IVa	" "
Sullivan, Joseph D.	IIIa	" "
Swift, William	VIb	" "
Sykes, Richard O.	IIb	" "
Tabor, James A.	IIa	" "
Taylor, Herbert H.	IVa	" "
Thomas, Cyril	IIb	Methuen, "
Torpey, Henry K.	IVa	Lowell, "
Townsend, Solon F.	VIa	" "
Wainwright, Harold	IVb	Lawrence, "
Waldron, Harold J.	IIIa	" "
Walker, John J.	VIb	" "
Walton, James A.	VIb	Lowell, "
Waring, Joseph	VIa	Methuen, "
Whiteoak, Percy	IIb	Lowell, "
Whitley, Arthur M.	IIa	" "
Wiesberg, Harry A.	VIb	Lawrence, "
Wikstrom, James E.	VIa	Lowell, "
Wilde, Herman E.	IVa	Lawrence, "
Wilson, Arthur K.	IVa	Lowell, "
Wood, Samuel J.	Ia	" "
Zia, Z. Zungsoo	IIb	" "
Zimmer, George D.	IVa	" "

### First Year

Addison, James	IIIa	Lowell, Mass.
Allard, Joseph O.	VIa	" "
Allen, Horace R. B.	IIb	" "
Alter, Frederick A.	IVc	Lawrence, "
Anderton, Harry	Va	Lowell, "
Andrews, Harold	IIb	Methuen, "
Andrews, Walter F.	Ib	Lowell, "
Angus, David A.	IIIa	" "
Arabian, Nishan G.	IVa	Lawrence, "
Archer, Charles N.	VIa	Nashua, N. H.
Armitage, Ernest	Vb	South Lawrence, Mass.
Axelrod, Benjamin	VIa	Lawrence, "
Bachmann, Walter A.	IIb	" "
Bacon, Charles N.	IIIa	Winchester, "
Bailey, Harold C.	IIa	Methuen, "
Ballinger, Raymond F.	VIe	North Chelmsford, "
Balmforth, Grace D.	VIb	North Billerica, "
Bamford, John T.	IIIa	North Andover, "
Banford, William H.	VIb	Lowell, "
Bancroft, William G.	VIb	Methuen, "
Barrows, Ariston K.	Va	Lowell, "
Barson, Charles F.	Va	" "

Name	Course	Address
Bates, Charles W.	I Ib	Lowell, Mass.
Bateson, George	VI d	Andover, "
Bean, Winthrop S.	IV a	Lowell, "
Beers, Norman L.	III a	Lawrence, "
Belanger, Joseph A. O.	I a	Lowell, "
Bellefeuille, Alfred	I Ib	" "
Benson, John S.	VI b	" "
Bernard, Joseph E.	VI b	" "
Berry, Wilbur F.	II a	" "
Biggs, Herbert	I Ib	" "
Billings, Rupert F.	IV a	" "
Bishop, Charles J.	VI a	North Chelmsford, "
Black, John H.	VI d	Andover, "
Blanchette, Arthur J.	I a	Lowell, "
Blazon, George A.	VI b	" "
Boomhower, Nelson	IV a	Lawrence, "
Bottomley, Wilfred	VI a	" "
Bowles, Willis H.	V a	Lowell, "
Boyle, John E.	III a	" "
Brainerd, Charles M.	I a	Lawrence, "
Brandy, James A.	VII	" "
Brandy, William F.	IV b	" "
Brewer, Frederick	V b	" "
Briggs, William H.	III b	South Lawrence, "
Broderick, Patrick J.	V b	North Billerica, "
Brown, Clifford	VI a	Lowell, "
Brown, James A.	VI a	" "
Brown, James H.	VI d - VI e	Forge Village, "
Bruton, Francis E.	VI b	Lowell, "
Bryson, Herbert H.	V b	Lawrence, "
Buchanan, John J.	VI b	North Chelmsford, "
Burckel, Henry E.	VI a - VI b	Lawrence, "
Burke, Frank J.	I a	Lowell, "
Burnham, Charles H.	VI a	" "
Burns, James J.	VI d	" "
Burns, Matthew D.	VI a	Lawrence, "
Burns, Robert H.	I a	Lowell, "
Cahill, Gerald J.	VI a	" "
Callahan, Paul L.	VI a	North Chelmsford, "
Campbell, George J.	IV a	Lowell, "
Carman, Francis	V a	" "
Carman, James	VI a	" "
Carney, Clifton P.	I Ib	North Andover, "
Caron, Olive	III b	Lowell, "
Carr, Richard B.	III b	" "
Cass, Charles	V b	" "
Chadwick, Laurie	V b	Lawrence, "
Champagne, Donat	VI b	Lowell, "
Champagne, Rodolphe	VI b	" "
Chandler, George E., Jr.	III a	" "
Chapdelaine, Frank	VI a	" "
Charbonneau, Alice M.	III b	" "
Charleton, Peter	IV a	" "
Chase, Frank P.	VI a	" "
Chenelle, Joseph F.	VI a	" "
Cheney, Harold G.	VI a - VI e	" "
Cheney, James R.	VI a - VI b	" "



Name	Course	Address
Cheney, Raymond S.	VIa	Methuen, Mass.
Cheyne, Hugh I.	IIb	Lowell, "
Chicken, Harold M.	Ia	Lawrence, "
Christian, Henry D.	Ib	Dracut, "
Chouinard, Joseph O.	VIb	Lowell, "
Clark, John H.	IVb	Lawrence, "
Clark, Leslie E.	VIa	Lowell, "
Clark, William	VIb	North Andover, "
Clerk, Cecil W.	IIIa	Lawrence, "
Clough, Herschel G.	IVa	Lowell, "
Coates, Alfred	VIa	Andover, "
Coburn, Elmer R.	IVa	Methuen, "
Cochrane, William D.	IVc	Lowell, "
Colburn, George B.	VIa	" "
Collins, Daniel A.	VIa	" "
Collins, Frank J.	VIb	" "
Colman, Leon T.	IIb	Lawrence, "
Colpitts, Stephen S.	VIa	Chelmsford, "
Condrey, Joseph P.	VIa	Lowell, "
Conley, John J.	IVa	" "
Conley, Leander F., Jr.	IVa	" "
Connors, Edward W.	VIb	" "
Cooke, Dwight W.	IVb	Winchester, "
Coolens, Julvin J.	IIIa	Lowell, "
Coolens, Leon	IIIa	" "
Corcoran, Emma	IIIb	" "
Corliss, Henry W.	VIa	" "
Correa, Manuel P.	Va	" "
Coupe, James T.	IIIa	" "
Couture, Arthur M.	VIc	" "
Cox, Edward J.	Vc	" "
Coyle, John	VIb	" "
Craig, Charles A.	Ib	" "
Crandall, Stanley M.	VIb - VIe	" "
Crawford, Reginald S.	VIb	Lawrence, "
Crawford, William S.	Va	" "
Crompton, George E.	IVa	Lowell, "
Cruikshank, Alexander M.	VIc	" "
Cudworth, Joseph F.	IIb	" "
Dainton, William A., Jr.	IVa	" "
Darois, Herbert J.	Va	" "
Daskalakis, Efthimios Z.	IIIa	" "
Davey, William J.	VIa	" "
Davies, Thomas J.	VIb	Lawrence, "
Davis, Alfred A.	VIb - VIc	Lowell, "
Davis, George A.	VIa	North Chelmsford, "
Dawson, Walter F.	IVa	Lowell, "
Dearth, Dwight K.	VIa	" "
Dearth, Harry	IIb	Methuen, "
Decelle, Harry	Ia	Dracut, "
DeLong, Harold M.	IIIa	Lowell, "
DeLuz, Antonio	VIc	" "
DeLuz, John	VIc	" "
Derocier, Dolphus E.	VIb	" "
Desaillier, Adolphe	VIc	" "
Desrochers, George E.	VIa	" "
DeWitt, Reuben H.	VIb	" "

Name	Course	Address
Dick, Henry K.	VIe	Lowell, Mass.
Dick, Hugo P.	Ia	" "
Dillon, Charles J.	VIa	" "
Dion, Ovila	VID	" "
Donahue, Lawrence W.	IVa	Lawrence, "
Doregan, John A.	IIIa	Malden, "
Downes, Martin	IVa	Lowell, "
Drain, John J.	VID	" "
Drain, Michael F.	IVa	" "
Drouin, Maurice O.	VIa	" "
Dubois, Ubald E.	VIa	" "
Ducharme, Armand	Ib	" "
Ducharme, Joseph W.	Ib	" "
Ducker, Norman	Va	Lawrence, "
Duffy, John F.	IIb	" "
Dupuis, Eucker P.	VIa	Lowell, "
Durgin, Edward F.	VIa	Lawrence, "
Durham, William R.	Vb	Lowell, "
Early, William E.	VIa	" "
Edington, Stuart	IIb	Lawrence, "
Edwards, David J.	IVa	Lowell, "
Eglinton, Royal R.	VIa	" "
Emmons, Harry I.	IVb	Lawrence, "
Evans, Albert H.	VIe	Lowell, "
Everett, Kenneth C.	VIa	" "
Farrell, Albert E.	IIb	" "
Farrell, Robert J.	IVa	" "
Field, LaForrest	IIIa	" "
Field, Robert L.	VIa	" "
Finch, Cecil C.	IIa	" "
Finnegan, Cornelius T.	IIIa	" "
Finnegan, Walter L.	VIa	" "
Fiorello, Ralph N.	VIa	" "
Fitz, Irving S.	Ia - Ib	Winthrop, "
Fitzsimmons, John	VIa	Lowell, "
Flathers, George J.	IVa	Lawrence, "
Fletcher, Harry C.	VIa	Lowell, "
Fontaine, George E.	VID	" "
Forbes, David	VII	Andover, "
Forsythe, William J.	VID	" "
Fortier, Alfred	VID	Lowell, "
Fortin, Edgar P.	VIa	" "
Fournier, Antonio A.	Ia	" "
Fournier, Francois	IIIa	" "
Freeman, Ralph W.	VII	" "
French, Walter B.	VIe	" "
Fretwell, Arthur	IIIa	Lawrence, "
Gagnon, Leo	VIa	Lowell, "
Garner, James	Ia	" "
Garnett, Gilbert	VIa	" "
Garrity, Peter F.	Va	" "
Gaudette, Eugene O.	VIe	" "
Gauthier, Marie L.	IIIb	" "
Geaney, James H.	VII	North Andover, "
Gearin, John W.	VIa	Lowell, "
Gilbo, Bernard J.	VIa	" "
Gilson, William W.	VIa	Graniteville, "

Name	Course	Address
Goddard, Walter L.	VII	Lawrence, Mass.
Goodnough, Herbert B.	VIb	" "
Gorman, James	VIa	Lowell, "
Gorman, James L.	VIb - VIc	" "
Goudreau, Joseph F.	VIa	" "
Gow, Robert, Jr.	IVa	" "
Green, Harry	IIb	North Chelmsford, "
Green, Howard B.	VIa	Lowell, "
Green, James	Vb	North Chelmsford, "
Green, Wilfred	Vb	" " "
Greenhalge, Leonard	IIb	Lowell, "
Greenlar, Alban K.	VIb	" "
Groves, Frederick	VIa	" "
Gunther, George A.	IVa	Dracut, "
Gustafson, Alfred L.	VIe	Lowell, "
Haggerty, Francis J.	VIb - VIe	" "
Haithwaite, Albert	IIIa	" "
Haithwaite, George Q. R.	IIIa	" "
Hall, Harry W.	VIb	" "
Hall, James	VIb	" "
Hall, Sydney H.	VIa	" "
Hall, William H.	IIIa	" "
Hallisey, Dennis F.	VId	" "
Hamahan, James P.	VIa	" "
Hamel, Treffe	VIa	Andover, "
Hanson, Winfield S.	IVb	Lowell, "
Harrington, Stuart S.	VIa	" "
Hayden, John J.	VIa	" "
Hayden, Lawrence H. J.	VIa	" "
Hayward, Harry J.	Ia	Lawrence, "
Hemmann, Albert E.	VId	" "
Hennessey, Mary A.	IIIb	Lowell, "
Hennessey, Teresa B.	IIIb	" "
Herron, Alexander T.	IVb	Lawrence, "
Herron, James A.	VIa	Salem, N. H.
Hersom, Roland H.	VIa	Lawrence, Mass.
Hervieux, Alice	IIIb	Lowell, "
Hibbert, George E.	IIIa	" "
Higginbottom, Joseph J.	VId	" "
Higgins, Reuben	IVa	Methuen, "
Hill, William L.	VIa - VIb	Lowell, "
Hinckley, Daniel W.	IIIa	" "
Hockmeyer, Clive E.	Ia	" "
Hogan, John P.	VIa	" "
Hondre, Eustace J.	Ia	" "
Howard, Herbert J.	VIa	" "
Howker, John	IIIa	" "
Hunt, Charles F.	IVa	" "
Hutchings, Urban P.	IVa	" "
Hutchinson, Roy L.	VIa	" "
Isherwood, Arthur J.	VIa	" "
Jackson, Walter J.	VII	Lawrence, "
Jamieson, Robert E.	VId	Lowell, "
Janvier, Mary B.	IIIb	" "
Jarvis, Joseph	VIa	North Chelmsford, "
Jenkins, Fred W.	VIb	Lawrence, "
Johnson, Arthur O.	IVb	" "

Name	Course	Address
Johnson, Charles B., Jr.	IIIa	Lowell, Mass.
Johnson, John E.	VIa	" "
Johnson, Ralph A.	VIId	" "
Johnson, Walter E.	Va	" "
Johnston, Arthur J.	Vb	" "
Jolly, William H.	IVa	" "
Jubenville, Joseph D.	VIId	" "
Kalbach, William M.	VIIb	" "
Kane, John S.	Vb	" "
Kannheiser, William A.	Vb	Lawrence, "
Keables, Austin D.	Ia	Lowell, "
Keefe, Leo F.	IIb	" "
Kehew, Walter E.	Ib	" "
Keith, George	Va	Andover, "
Kellett, John	VIa	Lawrence, "
Kelley, Edward	VIIb	Lowell, "
Kelley, Fred B.	VIIb	" "
Kelley, Paul J.	IIIb	" "
Kelly, Christopher S.	IIIb	" "
Kelly, Henry J.	VIa	" "
Kenney, Harold S.	VIa	" "
Kent, Asa R. E.	IIb	Lawrence, "
Kerrigan, Herbert T.	VIe	Lowell, "
Keyes, Philip R.	IIIa	Methuen, "
Kiessling, Robert H.	Ia - Ib	Rosindale, "
Kimball, Irving D.	VIId	Lowell, "
Kirkpatrick, Lloyd A.	IVa	" "
Knowlin, George J.	VIa - VIIb	" "
Kohler, George W.	VIa	Methuen, "
Krapp, John	Vb	Lowell, "
Labrie, Hermina	IIIb - IVa	" "
Lacoste, Elmer J.	VIa	" "
Ladd, Frederick D.	VIIb	" "
Laflame, Charles A.	VIIb	" "
Laflamme, Beulah G.	IIIb	" "
Lafontaine, Lucien	VIa	" "
Lambert, Harry	Vb	Methuen, "
Lambert, Thomas A.	VIIb	Lowell, "
Lamontagne, Ludger	VIa	" "
Lamy, Joseph	VIa	" "
Lanctot, William	VIa	" "
Lane, Lewis A. D.	VIId	Lawrence, "
Lane, Michael J.	VII	" "
Langford, Frederick T.	IVa	Methuen, "
Lannon, Joseph D., Jr.	IVa - VIe	Lowell, "
Laporte, Eva E.	IIIb	" "
Larkin, James T., Jr.	VIa	" "
Larkin, James T.	VIId	" "
LaRock, William E.	VIa - VIIb	" "
Lassig, Gustave W.	VIIb	Lawrence, "
Lawrence, Harold E.	IVa - VIIb	Melrose, "
Lawton, John P. R.	VIIb	Lowell, "
Leaver, Harry	IVa	Methuen, "
LeBourveau, Frederick W.	IIb	Lawrence, "
Legare, Lucy	IIIb	Lowell, "
Leland, Raymond C.	VIe	" "
Lemmond, Robert S.	Ia	" "

Name	Course	Address
Lenfest, Chester M.	VIa	Lowell, Mass.
Letendre, Joseph A.	VIa	" "
Lightbown, William H.	Vb	North Chelmsford, "
Lima, Frank	Va	Lowell, "
Lister, Henry	VII	Lawrence, "
Logan, Robert F.	Va	" "
Long, Harry A.	IIIb	Lowell, "
Low, Charles	IIIa	Andover, "
Lowney, May E. P.	Ia - VIa	Lowell, "
Lunan, Karl S.	VIa	" "
Lutz, Alwin	VIa	Lawrence, "
Luz, Anthony	VIa	Lowell, "
Lynch, John	VIa	Lawrence, "
McCann, Eugene J. J.	VIa	Lowell, "
McCann, Francis J.	VIa	" "
McCann, George J.	VIa	" "
McCarthy, Joseph A.	IVc	North Andover, "
McCarthy, William J.	IIIb	Andover, "
MacClure, Walter E.	IVa	Lowell, "
McCracken, David J.	VIb	Lawrence, "
McDermott, James C.	VIb	Lowell, "
MacDonald, John F.	IIIa	Woburn, "
McDougall, Albert T.	VIb	Lowell, "
McElroy, Claude R.	VIa	" "
McEneaney, Thomas F.	Ia	Lawrence, "
McGaunn, Charles	VIa	Lowell, "
McGaunn, Theodore	VIa	" "
McGeoch, James A.	IIIa	Lawrence, "
McGlauffin, Charles L.	VIa	Lowell, "
McGowan, Henry E.	VIb	" "
McGrath, William F.	VII	Lawrence, "
McGraw, William	Vb	" "
McIntosh, Percy M.	VIa - VIe	Lowell, "
McIntyre, William D.	IIb	Ballardvale, "
McKittrick, Percy A.	VIe	Lowell, "
McLaughlin, Lawrence H.	VIb	" "
MacLean, Eliot B.	VIa	" "
MacLean, Walter A.	VIa	" "
McNabb, Alice	IIIb	" "
McNabb, George T.	Ib	" "
McNamara, Thomas F.	Vb	" "
Maher, Charles J.	IVa	" "
Mahoney, Joseph	VIa	" "
Malley, James J.	Vb	Lawrence, "
Manning, John J.	VIa	Lowell, "
Marcotte, Adelard M.	VIa	" "
Marlowe, Fred W.	IIb	" "
Marsh, John	VIa	" "
Massey, Thomas S.	VIb	Andover, "
Matte, Raoul C.	VIa	Lowell, "
May, Lester G.	IVa	" "
Mears, Lewis N.	IVb	Ballardvale, "
Meinelt, Theodore E.	VIa	Lawrence, "
Merrill, Oscar E.	VIa	Lowell, "
Mey, John E.	VIa	Lawrence, "
Michaud, Joseph E.	VIa	Lowell, "
Milk, Ernest	VII	North Andover, "



Name	Course	Address
Millman, Leo	VIa	Lowell, Mass
Milne, Albert	Va	" "
Miyashi, Kanae	Ia - Va	Boston, "
Moloney, John F.	IVa	Lawrence, "
Moran, William H.	VIId	Lowell, "
Morevia, Peter F.	VIa	" "
Morris, Ernest S.	VIb	" "
Morrow, George W.	IVa	Lawrence, "
Morse, Joseph L.	VIa	Lowell, "
Mortensen, Astor H.	IIIa	Winchester, "
Mosley, Thomas	IIb	Methuen, "
Mullen, Frank J.	VIb	Lowell, "
Mulreany, John F.	IVa	Lawrence, "
Munroe, Ernest	Ib	Methuen, "
Murphy, Daniel F.	VIa	Lowell, "
Murphy, Joseph M.	IVa	Lawrence, "
Murphy, Joseph R.	VIa	Lowell, "
Murphy, Thomas J.	VIb	Lawrence, "
Neilson, Alexander S.	Vb	Lowell, "
Nerney, Joseph A.	VIa	" "
Nichol, Samuel J.	IVc	" "
Nichols, Charles F.	VIId	" "
Nichols, Fernald H.	VIa	" "
Nicholson, Walter	VIa	Methuen, "
Nicoll, John P.	VIa	Andover, "
Noble, James N. G. T.	VIb	Lawrence, "
O'Brien, John A.	VIb - VIe	Lowell, "
O'Brien, Richard C.	IIb - IIIa	Roxbury, "
O'Brien, Richard J.	VIa	Lawrence, "
O'Connell, Walter J.	IVa	Andover, "
O'Connor, John J.	VIb	Lowell, "
O'Connor, John S.	VIa	" "
O'Connor, Thomas P.	VIb	" "
O'Hagan, Christopher	VIa	" "
O'Keefe, Thomas F.	VIa	" "
O'Neil, Walter E.	VIe	North Chelmsford, "
O'Neill, Charles F.	IVc	Lowell, "
O'Neill, John L.	IIIa - Va	" "
Ortel, Charles	VIId	" "
Overton, James	IIIa	" "
Paquin, Emile	VIa	" "
Parent, George	Ib	" "
Parent, Marie L.	IIIb	" "
Park, James M.	VIa	" "
Parker, Charles L.	IVa	Lawrence, "
Parker, John G.	Ia	Lowell, "
Patterson, Robert H.	IIIb	Lawrence, "
Payette, Laura	IIIb	Lowell, "
Pearson, Erwin A.	VIb	" "
Pearson, Mortimer	VIId	" "
Peel, Tom	IVa	North Andover, "
Petroske, John J.	Vc	Methuen, "
Petty, James W.	Vb	Ballardvale, "
Peverill, Charles	VIb	Lowell, "
Pickles, Wilfrid	IIb	Lawrence, "
Pihl, Mansfred M.	VIa	Lowell, "
Porter, Charles M.	VIa	" "

Name	Course	Address
Porter, Elbert S.	IIb	Lawrence, Mass.
Porter, William E.	VIId	Lowell, "
Potter, Frederick	VIa	" "
Powers, James	VIa	" "
Pratte, Marie J.	IIIb	" "
Prince, Warren F.	VIId	North Chelmsford, "
Proctor, James W.	Ia	Lowell, "
Puccia, Salvatore	VIa	Lawrence, "
Purcell, James	Ia	Lowell, "
Pye, Dick	VIb	Methuen, "
Quance, Alfred	IVa	" "
Quinn, William S.	VIa	" "
Ralls, Myles F.	IIIb	Lowell, "
Ralph, Lindsay H.	IVa	Andover, "
Raney, Walter A.	VIa	Lowell, "
Ready, William C.	VIb	" "
Renfrew, Norman J.	VIa	Lawrence, "
Reynolds, James H.	IVa	Lowell, "
Reynolds, Thomas J.	VIa	" "
Richardson, Edgar J.	VIa	Methuen, "
Richardson, Wilbur S.	VIa - VIe	Lowell, "
Richburg, Clyde W.	VIb	" "
Ringwood, Geoffrey J.	VIb	" "
Ritchie, Charles L.	VIa	North Billerica, "
Ritchie, John J.	VIb - VIe	" " "
Roberts, David G.	IIb	Lawrence, "
Roberts, Joseph	Vb	" "
Roberts, Roscoe O.	VIe	Lowell, "
Robertson, Robert S.	Ia - Va	" "
Robitaille, Eugene E.	Vb	" "
Rogers, Edmund D.	VIId	" "
Ronan, John J.	VIa	" "
Rowley, Herbert	IIIa	" "
Ryan, John F.	VIId	" "
Ryan, William F.	VIa	" "
St. Arnaud, Joseph A.	VIa	" "
St. Cyr, Arthur E.	VIa	" "
Saletra, Maurice J.	IVa	Lawrence, "
Sanborn, Harold S.	VII	North Andover, "
Saunders, Edward	VIId	Lowell, "
Sawyer, Samuel	VIa	" "
Schneider, Herman A.	IIb	Lawrence, "
Schofield, Michael J.	VIb	" "
Schultz, Henry G.	VIa	" "
Schultz, Hughie B.	VIb	" "
Schwarzenberg, Raymond C.	VIb	" "
Scowcroft, Joseph	IIb	Methuen, "
Scully, Patrick F.	VII	Lowell, "
Sevigny, Emile J.	Va	" "
Shannon, Thomas F.	IIIa	" "
Shearer, David D., Jr.	VII	Lawrence, "
Shearer, William A.	Vb	" "
Shedd, Paul V.	Ia	Lowell, "
Sheehan, James J.	IIIa	" "
Shepherd, Herbert A.	IIIb	" "
Shirton, James W.	VIa	Lawrence, "
Shone, Fred	IIb	" "

Name	Course	Address
Silliter, Gilbert	VIa	Methuen, Mass.
Sline, Thomas A.	IIIa	Lawrence, "
Smart, George A.	Va	Lowell, "
Smith, David	VIIb	Methuen, "
Smith, Edwin H.	IVa	Lawrence, "
Smith, George W.	VIIb	Lowell, "
Smith, John R.	IVa	Lawrence, "
Smith, Joseph	VId	Lowell, "
Smith, Lewis P.	IVa	" "
Smith, Lilly M.	IVa	" "
Smith, Rothwell E.	VIe	" "
Smith, Thomas	Va	" "
Soucier, Emile J.	VIa	" "
Sousa, Andrew P.	VIa	" "
Spalding, Evans	IIIa	Lawrence, "
Spence, George M.	IIb	Lowell, "
Spillane, James F.	VIa	" "
Stafford, James	Va	Lawrence, "
Stead, James, Jr.	IVa	Lowell, "
Stephens, Harry G.	IIIa	" "
Stephens, Paul S.	VIa	" "
Stewart, George	VIe	" "
Stewart, James L.	VIIb	Lawrence, "
Stiehler, Arthur F.	Vb	" "
Stokham, Ernest F.	IVc	Lowell, "
Stone, Henry W.	VIa	" "
Sullivan, Michael F.	VII	Dracut, "
Summersby, William C.	Ia	Lawrence, "
Swain, Robert	VIa	North Chelmsford, "
Syvret, Francis P.	VIa	" "
Takahashi, Gentaro	Ia - Va	Lowell, "
Taylor, David R.	VIIb	" "
Taylor, Frank	VIa	" "
Taylor, Gavin R.	IIIa	Methuen, "
Taylor, Herbert C.	Ia	Waban, "
Taylor, Robert M.	IIIa	West Somerville, "
Thomas, Albert G.	IIa	Lowell, "
Thomas, Franklin W.	VIIb	Dracut, "
Thompson, George	Vb	Lawrence, "
Thomson, William M.	Ia	Lowell, "
Thyng, Thomas C.	VIa	Lawrence, "
Todd, Thomas	VIa	Lowell, "
Toohy, John J.	IVa	" "
Toohy, Loretta F.	IIIb	" "
Topham, Walter B., Jr.	IIb	Lawrence, "
Tremblay, Joseph A.	IVa	Lowell, "
Tucker, Charles	Ia	" "
Tucker, William W.	Ia	" "
Turcotte, Herman O.	IIIb	" "
Turgeon, Roderick	IVc	" "
Turner, Harold	VIIb	Lawrence, "
Valentine, Alexander B. R.	VIa	Andover, "
Vassar, Albert E.	VIa	Lowell, "
Venner, Frederic J.	IIIb	" "
Wainwright, Thomas	IIIb	Lawrence, "
Wallwork, Charles M.	IIIb	Lowell, "
Walworth, Walter F.	VIe	" "

Name	Course	Address
Waters, Thomas W., Jr.	Va	Lawrence, Mass.
Webster, Fred E.	IIIb	Lowell, "
Welsh, Thomas H.	VIa	" "
White, Michael J.	IIIb	" "
Whittaker, Thomas W.	IIb	Methuen, "
Whitten, Charles B.	VII	Lawrence, "
Wieland, Herbert E.	IVa	" "
Wigley, Walter J.	VIa	Lowell, "
Wilkinson, William F.	IVa	Lawrence, "
Wilson, Joseph F.	IIIb	Methuen, "
Wilton, George H., Jr.	IIIa	North Andover, "
Winning, Herbert	IIIa	" " "
Wolger, John H.	IIb	Lawrence, "
Wood, Herbert	Vb	North Andover, "
Wood, William H.	IVc	Chelsea, "
Woods, Harvey A.	Ia	Lowell, "
Wyman, John L.	IVa	Lawrence, "
Young, Fred L.	VIb	Lowell, "
Zia, Z. Zungtsoo, Chem. E.	IIb	" "

### SUMMARY

Day Students .....	130
Evening Students .....	782
Total .....	912
Names Counted Twice .....	65
Net Total .....	847

# ALPHABETICAL LIST OF GRADUATES

Name	Course	Class	Day or Evening
Abbott, Edward G.	Vb	1913	E
Abbott, Edward M.	II	1904	D
Abbott, George R.	II	1908	D
Abbott, Paul W.	Ia	1906	E
Ackroyd, Theodore C.	IIb	1907	E
Adams, Henry S.	IIa	1903	E
Adams, Henry S.	I	1905	D
Adams, Michael E.	VI	1904	E
Adams, Tracy A.	IV	1911	D
Adams, William R.	IIa	1902	E
Allen, William J.	IVa	1913	E
Alter, Frederick A.	IVa	1914	E
Amiot, Louis H.	Va	1906	E
Anderson, Carl A.	IV	1909	E
Anderton, Harry	Va	1910	E
Anderton, Harry	Vb	1913	E
Andrews, Oliver	Ia-Va	1911	E
Arienti, Peter J.	IV	1910	D
Armstrong, Elias B.	IIb	1906	E
Arnold, Warren H.	VII	1908	E
Arnold, Warren H.	IIIa	1909	E
Arundale, Henry B.	II-III-V	1905	D
Arundale, Henry B.	II	1907	D
Aspinwall, William	IIb	1901	E
Atkinson, Norman	Vb	1910	E
Atkinson, Reginald C.	IVa	1913	E
*Avery, Charles H.	II	1906	D
Bailey, Carl E.	Ia	1910	E
Bailey, Joseph W.	I	1899	D
Bailey, Rothwell	Va	1909	E
Bailey, Walter J.	IV	1911	D
Bain, William A.	VII	1907	E
Bake, Herbert	IIIa	1905	E
Bake, Herbert	P. G. IIIa	1906	E
Bake, Herbert	VII	1907	E
Bake, Herbert	P. G. IIIa	1909	E
Bakewell, Albert	Vb	1914	E
Baldwin, Arthur L.	IV	1900	D
Baldwin, Frederick A.	II	1904	D
Ballard, Horace W. C. S.	IV	1908	D
Ballinger, Frederick W.	IIb	1907	E
Ballinger, William E.	IIb	1911	E
Balmforth, James H.	IIa	1903	E
Balmforth, James H.	IIa-b	1904	E
Balmforth, William F.	VI	1904	E
Balmforth, Martha B. (See French)			
Banks, Jonas	Va	1909	E
Banks, Jonas	Vc	1910	E
Barber, James E.	IIb	1907	E
Barker, John P.	V	1904	E
Barlow, Robert	V	1902	E
Barnes, Hammond	Ia - Va	1914	E
Barnes, Joseph	Ia	1911	E
Barr, Elizabeth Butler	IIIb	1909	E

\*Deceased



Name	Course	Class	Day or Evening
Barr, I. Walwin	I	1900	D
Barraclough, John C.	Ia	1907	E
Barrington, James L.	IV	1908	E
Barrington, John A.	IV	1904	E
Barry, Edward J.	IIIa	1903	E
Bassett, Cyrus J.	Vb	1913	E
Bastow, Henry	IIIa	1903	E
Bastow, Henry	V	1905	E
Bastow, Percy	IVa	1911	E
Bastow, Stephen W.	IV	1907	E
Baxter, Alvah J.	IIa	1903	E
Bayard, Pierre P.	IIIa	1907	E
Beaulieu, William E.	IIb	1913	E
Beech, Wilfred	Ia	1912	E
Begen, Thomas W.	IIb	1907	E
Begen, Thomas W.	IIb	1908	E
Bell, Charles W.	VIa	1913	E
Bell, Frederick W.	IIa	1905	E
Bennett, Edward H.	V	1903	D
Bennett, Herbert B.	II	1913	D
Benoit, Benjamin L.	VIb	1909	E
Benoit, William A.	Va	1907	E
Bernard, Joseph E.	VIId	1912	E
Berry, Alfred H.	VI	1908	E
*Berry, Frank M.	IIIa	1899	E
*Berry, Frank M.	V	1901	E
Berry, Percy W.	Vb	1910	E
Bigelow, Prescott F.	II	1912	D
Binns, Heaton	II-V	1899	E
Binns, Heaton	VI	1902	E
Birkby, Charles H.	IVa	1911	E
Bixby, Edward E.	IIIa	1914	E
Black, Alexander S.	Vb	1913	E
Blaikie, Howard M.	II	1911	D
Blais, Emile	VIId	1912	E
Blake, Parker G.	VI	1914	D
Blanchette, Eugene	IIIb	1912	E
Bloom, Wilfred N.	IV	1903	D
Bodwell, Henry A.	II	1900	D
Boije, Walter F.	IIb-VII	1912	E
Booth, Arthur	IIIa	1909	E
Boucher, John L.	VI	1904	E
Bouille, Arthur L.	Vb	1907	E
Bourchard, Ethan J.	Vc	1910	E
Bourchard, Robert R.	Vb	1910	E
Bowen, Herbert E.	IIIa	1909	E
Bowie, Samuel A.	VI	1905	E
Bowring, George P. B.	VI	1902	E
Boyd, George A.	I	1905	D
Boyle, John E.	Va	1914	E
Bradford, Roy H.	II	1906	D
Bradley, Raymond F.	VI	1914	D
Bradley, Richard H.	V	1901	D
Brainerd, Albert C.	Ia	1912	E
Brainerd, Arthur T.	IV	1909	D
Brainerd, Harry C.	Ia	1912	E

\*Deceased

Name	Course	Class	Day or Evening
*Brainerd, Irving L.	Ia	1902	E
Bramley, Charles	Va	1912	E
Brandy, William F.	IVa	1914	E
Brannen, Leon V.	III-V	1907	D
Brannen, Leon V.	IIa	1907	E
Breen, James D.	Vc	1913	E
Breen, John P.	Vb	1913	E
Brickett, Chauncey J.	II	1900	D
Brickett, Raymond C.	II	1914	D
Broadbent, James H.	Vb	1908	E
Broadbent, James T.	Ia	1899	E
Broadbent, William	Vb	1908	E
Broderick, Thomas H.	VII	1912	E
Brooks, Noah	IIIa-V	1901	E
Brouder, John J.	IIIa	1906	E
Brouder, John J.	VII	1907	E
Brown, James H.	VIa	1914	E
Brown, James P.	IIIa	1905	E
Brown, James P.	P. G. IIIa	1906	E
Brown, James T.	IIIa	1908	E
Brown, Leon E.	VIa	1914	E
Brown, Rollins	IV	1912	D
Brown, William F.	VIb	1911	E
Brown, William G.	IIb	1906	E
Browne, Charles D.	Ia	1912	E
Bryant, Ernest L.	VI	1905	E
Buchan, Donald C.	II	1901	D
Buckley, Harry	IV	1908	E
Buckley, Richard A.	Vb	1909	E
Bucklitsch, Gustave J.	IIb	1907	E
Bunce, Raymond H.	Vb	1909	E
Burgess, Joseph H.	Va	1906	E
Burgess, Joseph H.	Vb	1907	E
Burgess, Joseph H.	IIIa	1910	E
Burghardt, Edward S.	IIa	1902	E
Burghardt, Paul C.	IIa	1901	E
Burke, George J.	VII	1912	E
Burke, James F.	Vc	1911	E
Burke, Thomas F.	Ia	1905	E
Burnham, Frank E.	IV	1902	D
Burnham, Joseph W.	IIIa	1906	E
Burnham, Wilmont V.	Vb	1906	E
Burns, Edward J.	IV	1905	E
Burns, James E.	IV	1905	E
Burns, Richard L.	VIb	1914	E
Burrage, Katherine C.	IIIb	1899	D
Burrage, Katherine C.	P. G. IIIb	1900	D
Butland, Ralph A.	VII	1913	E
Butler, Benjamin O.	VI	1904	E
Butler, Elizabeth M. (See Barr)			
Butterworth, Charles A.	Va	1907	E
Butterworth, John A.	IIb	1907	E
Buzzell, Fred S.	IIIa	1912	E
Buzzell, Fred S.	VII	1913	E
Buzzell, William O.	IIIa	1901	E
Buzzell, William O.	P. G. IIIa	1902	E
Byam, Walter S.	VI	1903	E

\*Deceased

Name	Course	Class	Day or Evening
Cady, Dennis J.	V	1903	E
Callahan, Patrick A.	VI	1904	E
Cameron, Elliott F.	IV	1911	D
Campbell, Albert D.	IIb	1900	E
Campbell, Archibald	IV	1908	E
Campbell, Edward G.	VIc	1910	E
Campbell, Laura E.	IIIb	1900	D
Campbell, Louise P.	IIIb	1903	D
Campbell, Orison S.	II	1903	D
Campling, Frank	IIb	1914	E
*Carden, Francis E.	IIb	1907	E
*Carden, Francis E.	IIb	1908	E
Carlson, Ernest B.	IIb	1907	E
Carlson, Goddard O.	VII	1912	E
Carman, William	Va	1909	E
Carney, William J.	Ia	1908	E
Caron, Cleophas	Ia	1905	E
Carpilio, John A.	VIa	1911	E
Carr, George E.	I	1905	D
Carter, Charles R.	Vb	1908	E
Carter, Robert A.	IV	1902	D
Carty, Thomas P.	Vb	1911	E
Cary, Julian C.	VI	1910	D
Cawthra, Albert B.	IIb	1900	E
Chamberlin, Frederick E.	I	1903	D
Chandler, Proctor R.	IV	1911	D
Charleton, Peter	VIa	1913	E
Cheetham, John James	IIIa	1901	E
Cheetham, John James	P. G. IIIa	1902	E
Cheetham, John Joseph	Ia	1904	E
Chesworth, Frank K.	Va	1909	E
Chippindale, Ernest W.	IIb	1901	E
Chisholm, Lester B.	I	1911	D
Christenson, John O.	VIb	1912	E
Christison, Hugh	IV	1910	E
Christison, Hugh	IVd	1911	E
Church, Charles R.	II-V	1906	D
Churchill, Charles W.	III	1906	D
Clapp, F. Austin	II	1904	D
Clark, John H.	IVa	1914	E
Clark, John W.	IVa	1912	F
Clark, Thomas T.	II	1910	D
Clarke, Wesley J.	VIId	1913	E
Classon, Walter H.	Vc	1913	E
Cleary, Charles J.	II	1913	D
Clogston, Raymond B.	IV	1904	D
Coan, Charles B.	IV	1912	D
Cochrane, John	VIb	1911	E
Cochrane, William	IVa	1914	E
Cockell, Frederick H.	IIIa	1909	E
Colby, Arthur D.	Ia	1900	E
Cole, Edward E.	IV	1906	D
Cole, James T.	II	1905	D
Collier, John	IIIa	1899	E
Collier, John	P. G. IIIa	1902	E
Collins, Frank	VIa	1914	E

\*Deceased

Name	Course	Class	Day or Evening
Collins, John A.	IIa-b	1905	E
Coman, James G.	I	1907	D
Conant, Harold W.	I	1909	D
Conant, Richard G.	I	1912	D
Conklin, Jennie G.	IIIb	1905	D
Conley, Frederick A.	VI	1904	E
Connors, Edward F.	VI	1904	E
Cook, Cheney E.	IIIa	1905	E
Cook, Kenneth B.	I	1913	D
Cooper, George H.	Ia	1914	E
Corr, Eben W.	Vb	1908	E
Corr, James F.	Vb	1908	E
Cote, Fred J.	VIa	1913	E
Cote, George W.	VIIb	1911	E
Cowdell, Herbert	V	1901	E
Cowdrey, Charles E.	V	1902	E
Cowdrey, Charles E.	Vb	1909	E
Cox, Edward J.	IIIa	1910	E
Cox, Edward J.	Va	1911	E
Cox, Edward J.	Ia	1913	E
Cox, Edward J.	Ia	1914	E
Craig, Albert W.	IV	1907	D
Craig, Clarence E.	III	1902	D
Craven, Harry	VII	1908	E
Creese, Guy T.	IV	1914	D
Cremin, Daniel J.	Ia	1902	E
Crompton, Henry H.	II	1899	E
Cudmore, Edward T.	VId	1913	E
Culver, Ralph F.	IV	1904	D
Curran, Charles E.	II-III-V	1902	D
Currier, Herbert A.	I	1906	D
Currier, John A.	II	1901	D
Curtis, Frank M.	I	1906	D
Curtis, William L.	II	1905	D
Cushing, Lester H.	Ia	1913	E
Custer, James J. E.	V	1905	E
Cutler, Benjamin W., Jr.	III	1904	D
Cutress, Albert J.	VId	1910	E
Cuttle, James H.	II	1899	D
Dalton, Gregory S.	IV	1912	D
Dana, Clarence A.	VI	1905	E
Daskalakis, Efthimios Z.	Vb	1912	E
Daskalakis, Efthimios Z.	Vc	1913	E
Davieau, Arthur N.	VI	1913	D
Davis, Alexander D.	VI	1913	D
Davis, Alexander D.	VI	1914	D
*Davis, Henry	IIb	1901	E
Davis, Prentice T.	Ia	1904	E
Davison, Frank L.	Vb	1909	E
Dean, Hubert R.	VIIb	1911	E
Dearborn, Roy	VI	1913	D
Dearth, Elmer E.	IV	1912	D
Deely, John A.	Vb	1910	E
Delaney, Michael J.	Vb	1911	E
Delderfield, John W.	VId	1914	E
Delmage, Edward R.	IIIa	1904	E

\*Deceased

Name	Course	Class	Day or Evening
Dempsey, John W.	IIa	1904	E
Devine, Mary F.	IVa	1913	E
Dewey, James F.	II	1904	D
Dewey, Maurice W.	II	1911	D
Dick, Henry K.	Ia	1912	E
Dick, Hugo P.	IIIa	1905	E
Dick, Hugo P.	P. G. IIIa	1906	E
Dick, Hugo P.	IIb	1907	E
Dick, Hugo P.	Vb	1908	E
Dickson, Andrew	IIa	1906	E
Dillon, James H.	III	1905	D
*Dimlick, Benjamin C.	IIIa	1905	E
*Dimlick, Benjamin C.	P. G. IIIa	1906	E
Dittman, Ralph A.	IIIa	1912	E
Dixon, Arthur	IIIa	1908	E
Dobbs, William	IIb	1907	E
Dobbs, William	IIb	1908	E
Dodge, Charles P.	IIa	1907	E
Dodge, Ernest W.	Vb	1911	E
Dodge, Frank	Ia	1906	E
Dollbaum, John A.	IIIa	1912	E
Donahey, William H.	Vb	1912	E
Donahue, Michael F.	VI	1904	E
Donahue, William E.	VIIb	1914	E
Donald, Albert E.	II	1904	D
Donnellan, Frank T.	IIa	1902	E
Donnellan, Frank T.	V	1903	E
*Donnelly, James	Ia	1900	E
Donovan, Daniel F.	IIa	1901	E
Doole, George L.	VI	1904	E
Dooley, Edward W.	VI	1904	E
Dorr, Clinton L.	VI	1914	D
Dowd, Martin F.	IIIa	1914	E
Downs, John F.	VId	1911	E
Doyle, John B.	VId	1913	E
Duce, Benjamin	IIIa	1906	E
Duce, Benjamin	VII	1907	E
Duckett, Fred I.	Vb	1910	E
Dudley, George E.	Ia	1902	E
Duggan, Francis P.	VI	1904	E
Dulligan, Charles E.	VIa	1909	E
Dulligan, Charles E.	IVa	1912	E
Dulligan, Lawrence F.	VIa	1910	E
Dulligan, Thomas	VIa	1911	E
Dunn, George C.	IIIa	1908	E
Dunn, George C.	IVa	1910	E
Dunn, George C.	IVb	1913	E
Dunning, Carlos W.	VIIb	1909	E
Duval, Joseph E.	II	1910	D
Dwight, John F., Jr.	II	1908	D
Egan, Charles H.	IVa	1912	E
Ehrenfried, Jacob B.	II-V	1907	D
Ekengren, Hilding C.	IIIb	1913	E
Eklund, Louis V.	Vb	1910	E
Elliot, Gordon B.	II	1912	D
Ellis, George W.	VII	1906	E

\*Deceased



Name	Course	Class	Day or Evening
Elston, Fred R.	IIIa	1900	E
Emerson, Frank W.	II	1903	D
Emmons, Harry I.	IVa	1914	E
Engstrom, Karl E.	VI	1912	D
Erbe, Gustave	VI	1905	E
Evans, Alfred W.	III	1903	D
Evans, William R.	III	1903	D
Evison, William A.	V	1901	E
Ewer, Nathaniel T.	IV	1901	D
Eyers, John T.	IV	1906	E
Fairbanks, Almonte H.	II	1909	D
Farmer, Chester J.	IV	1907	D
Farr, Leonard S.	II	1908	D
Farrell, Thomas	IIa	1901	E
Fels, August B.	II	1899	D
Ferguson, Arthur F.	I	1902	D
Ferguson, Arthur F.	I	1903	D
Ferguson, Thomas	V	1902	E
Ferguson, William G.	III	1909	D
Field, Charles W.	VI	1902	E
Fielding, Fred	Vc	1910	E
Finlay, Harry F.	IV	1910	D
Fisher, Russell T.	VI	1914	D
Fiske, Starr H.	II	1909	D
Flaherty, William	Vb	1911	E
Fleming, Frank E.	IV	1906	D
Flemings, Lester A.	Va	1910	E
Fletcher, Roland H.	VI	1910	D
Flint, Leon G.	IIIa	1907	E
Flynn, John	VId	1910	E
Flynn, John J.	VI	1903	E
*Flynn, Patrick	Vb	1910	E
Flynn, Thomas P.	IV	1911	D
Flynn, William J.	Vb	1908	E
Ford, Edgar R.	IV	1911	D
Forrest, Fred G.	IIa	1902	E
Forrest, William R.	VId	1913	E
Fortune, David A.	IIb	1902	E
Foster, Clifford E.	II	1901	D
Foster, Sherwood L.	Ia	1905	E
Fournier, Albert A.	Ia	1911	E
Frame, William	V	1901	E
Frank, Emil M.	IIIa	1904	E
Frank, Emil M.	P. G. IIIa	1906	E
Frechette, Alphonse J.	IIb	1907	E
Freeman, George D.	VId	1913	E
Freeman, Ralph W.	IVa	1912	E
Freeman, Ralph W.	IVb	1914	E
French, Ernest J.	Ia	1905	E
French, Martha Balmforth	IIIa	1903	E
Frost, Harold B.	II	1912	D
Frothingham, Newton S.	Ia	1912	E
Fujiyoshi, Heisayu	Ia	1910	E
Fujiyoshi, Heisayu	Va	1911	E
Fuller, George	I	1903	D

\*Deceased

Name	Course	Class	Day or Evening
Fulton, John M.	V	1906	E
Gadsby, Arthur N.	II	1913	D
Gagan, John H.	V	1901	E
Gahm, George L.	II	1906	D
Gainey, Francis W.	IV	1911	D
Gakidis, Alexander N.	IVa	1911	E
Gale, Harry L.	III	1910	D
Garner, William	IIIa	1903	E
Garrity, Joseph F.	VIa	1911	E
Gaspar, Edith E.	IIIb	1910	E
Gaunt, Alfred C.	IIIa	1899	E
Gaunt, Alfred C.	P. G. IIIa	1902	E
Gaunt, Alfred C.	IIa	1903	E
Gaunt, Alfred C.	IIb	1904	E
Gaunt, Ernest H.	IIIa	1909	E
Gauthier, William	Vb	1910	E
Gay, Earle B.	Ia	1905	E
Gay, Olin D.	II	1908	D
Gerrish, Walter	III	1903	D
Gibbons, James J.	VIa	1914	E
Giffin, Charles H.	IIIa	1913	E
Giffin, Charles H.	VII	1914	E
Giffin, George R.	IIIa	1913	E
Giffin, George R.	VII	1914	E
Gile, Harold E.	IVa	1913	E
Gilinson, Philip J.	VIa	1909	E
Gill, Gardner G.	IVa	1914	E
Gillispie, James E.	VII	1907	E
Gillon, Sarah A.	IIIb	1906	D
Gilman, Edward T.	VIa	1914	E
Glennon, Edward M.	IVa	1911	E
Goldberg, George	VI	1910	D
Good, Henry	Ia	1902	E
Goodchild, George	Ia	1903	E
Goodchild, George	VI	1905	E
Goodhue, Amy H. (See Harrison)			
Goodwin, Ross	Vb	1911	E
Gookin, Alice L.	IIIb	1910	E
Gordon, Herbert E.	IIIa	1909	E
Gordon, Loyd H.	VIa	1913	E
Grant, Archibald	IIb	1901	E
Graves, John F.	VIb	1912	E
Gray, Finley M.	VI	1903	E
Greenhalge, James	Vc	1908	E
Greenwood, Ralph F.	VII	1912	E
Gregson, Robert B.	Va	1906	E
Gregson, Robert B.	Ia-Vc	1907	E
Grouke, Michael	IIb	1901	E
Gustafson, Alfred L.	IVa	1911	E
Gyzander, Arne K.	IV	1909	D
Haartz, John C.	VII	1907	E
Haas, Ignatius	Ia	1907	E
Hadley, Walter E.	IV	1908	D
Haigh, Walter	IIIa	1902	E
Haigh, William	Vb	1906	E.
Haithwaite, Albert	Ia	1914	E

Name	Course	Class	Day or Evening
Haldane, Andrew	Va	1914	E
Hall, Sydney H.	VIb	1914	E
Hallbauer, William R.	Vb	1908	E
Halsell, Elam R.	I-V	1904	D
Hamblett, Harry A.	Ia	1907	E
Hammond, John N.	Vb	1914	E
Handley, John M.	Vb	1911	E
Hanglin, Albert J.	IV	1907	E
Hanglin, William E.	Vb	1907	E
Hannagan, Edward F.	IIb	1913	E
Hannagan, Edward F.	VII	1914	E
Hansen, Hans M.	VIId	1912	E
Hanslip, Charles W.	Vb	1911	E
Hanson, Edward	IIIa	1908	E
Hanson, Edward	P. G. IIIa	1909	E
Hanson, Edward	Ia	1913	E
Hanson, Winfield S.	IVa	1914	E
Harder, Elmer E.	VI	1905	E
Hardman, David B.	IV	1908	E
Hardy, Philip L.	VI	1910	D
Harmon, Charles F.	I	1899	D
Harris, Charles E.	I	1905	D
Harris, George S.	I	1902	D
Harris, Louis	VII	1908	E
Harrison, Amy Goodhue	IIIb	1900	D
Harrison, Amy Goodhue	P. G. IIIb	1901	D
Hartshorn, George T.	VII	1912	E
Hartwell, Henry E.	VI	1906	E
Hartwell, Marcus H.	Ia-Va	1911	E
Hartwig, Albert E.	Vb	1914	E
Haskell, Spencer H.	II	1907	D
Haskell, Walter F.	IV	1902	D
Hassett, Paul J.	IV	1912	D
Hathorn, George W.	IV	1907	D
Haven, George W.	IIIa	1905	E
Haworth, Joseph	VI	1902	E
Hay, Ernest C.	II	1911	D
Hayes, Michael C.	IIa	1909	E
*Heaton, Forster G.	IV	1911	E
Hebert, Charles L. J.	IV	1907	E
Hempel, Frank	V	1904	E
Hendrickson, Walter A.	II	1911	D
Hennessey, Ambrose M.	VII	1908	E
Hennigan, Arthur J.	II	1906	D
Henzie, John J.	IIIa	1914	E
Herbst, Gustav F.	Va	1914	E
Hering, Paul C.	IIIa	1910	E
Herrick, William E.	VII	1911	E
Herron, Alexander T.	Ia	1913	E
Herron, Alexander T.	IVa	1914	E
Hibbert, George E.	Va	1910	E
Hibbert, George E.	Vc	1911	E
Hibbert, George E.	Vb	1912	E
Higgins, Alfred	IIIa	1913	E
Higgins, James A.	IIa	1903	E

\*Deceased

Name	Course	Class	Day or Evening
Higgins, James A.	IIa-b	1904	E
Higginson, Joseph H.	IIIa	1912	E
Hildreth, Harold W.	II-V	1906	D
Hildreth, Harold W.	II	1907	D
Hill, Bruce	IIIa	1914	E
Hill, Daniel	IIb	1901	E
Hill, Ellsworth O. C.	IIb	1910	E
Hill, Harold	Ia	1908	E
Hill, Harold	Va	1909	E
Hill, Paul	VII	1914	E
Hilliard, William B.	VIa	1910	E
Hillier, Arthur P.	IIb	1909	E
Hintze, Thomas F.	I	1906	D
Hird, Arthur W.	Ia	1910	E
Hird, James A.	IVa	1910	E
Hitchcock, Thomas B.	Ia-IIa-IIIa	1901	E
Hitchen, Harry S.	Vb	1907	E
Hitchen, Thomas G.	Vb	1907	E
Hodge, William	VIa	1911	E
Hodgkins, Albert A.	VII	1909	E
Hodgkins, Albert A.	IIIa	1910	E
Hoellrich, Martin J.	Vb	1908	E
Hoellrich, Martin J.	Vc	1910	E
Hoelzel, Louis C.	VIa	1913	E
Hoessler, Carl, Jr.	IIIa	1906	E
Hogan, James A.	V	1902	E
Holden, Francis C.	IV	1909	D
Holgate, Benjamin	III	1902	D
Holgate, Benjamin	V	1903	D
Holgate, Charles H.	IIa	1901	E
Holland, Walter F.	IIIa	1912	E
Hollings, James L.	I	1905	D
Holmes, Otis M.	VI	1912	D
Holmes, Otis M.	VI	1913	D
Holt, Gavin O.	IVa	1910	E
Holt, Harry C.	VIa	1909	E
Hood, Leslie N.	IV	1912	D
Hook, Russell W.	IV	1905	D
Horman, Charles P.	IIIa	1914	E
Horsfall, George G.	II-III-V	1904	D
Horton, Chester T.	VI	1913	D
Horton, Chester T.	VI	1914	D
Houston, William I.	IIIa	1909	E
Houston, William I.	Vb	1910	E
Howard, John	V	1900	E
Howard, John	IIIa	1903	E
Howard, John	IIa	1906	E
Howard, John	VII	1907	E
Howard, Thomas	V	1905	E
Howe, Charles W., Jr.	VId	1914	E
Howe, Woodbury K.	I	1910	D
Howell, Edward A.	Va	1909	E
Howker, John	Ia	1913	E
Howker, John	Va	1914	E
Hoyle, Edward	IIb	1902	E
Hoyle, Joseph	IIb	1904	E

Name	Course	Class	Day or Evening
Hoyt, Charles W. H.	IV	1907	D
Hubbard, Ralph K.	IV	1911	D
Huising, Geronimo H.	I	1908	D
Hunt, Chester L.	III	1905	D
Hunt, Herbert R.	VI	1905	E
Hunter, Ralph	IIIa	1901	E
Hunter, Ralph	V	1903	E
Hunton, John H.	VII	1910	E
Hunton, John H.	II	1911	D
Hunton, Lewis G.	IV	1905	E
Hurtado, Leopoldo, Jr.	Vc	1910	E
Hurtado, Leopoldo, Jr.	VI	1910	D
Huse, Charles H.	VIb	1914	E
Hutchings, James C.	VII	1912	E
Hutton, Clarence	V	1900	E
Hutton, Clarence	III	1903	D
Hutton, Harold	V	1906	E
Hutton, John M.	Vb	1906	E
Hutton, Thomas V.	Vb	1910	E
Ignatius, Pentti	Va	1907	E
Inberg, Magnus	Ia	1906	E
Ingham, Benjamin W.	Ia	1908	E
Innes, Andrew K.	Vb	1913	E
Jackson, Frank	VIb	1910	E
Jackson, Frank	VIc	1912	E
Jackson, Walter J.	IIa	1913	E
Jackson, Walter J.	Vb	1914	E
Jarvis, Charles	Vb	1913	E
Jasper, Grant	Vc	1912	E
Jean, Adhemard C.	VIa	1910	E
Jeanotte, Arthur	VI	1904	E
Jelleme, William O.	I	1910	D
*Jenckes, Leland A.	VI	1908	D
Jennings, James J.	IIIa	1903	E
Jepson, Harry	Vb	1907	E
Johnson, Arthur K.	IV	1913	D
Johnson, Arthur O.	IVa	1914	E
Johnson, Ernest A.	IIa-b	1902	E
Johnson, Ernest A.	V	1906	E
Johnson, Samuel L.	V	1903	E
Jones, Everett A.	III	1904	D
Jones, Everett A.	III	1905	D
Jones, Herbert	Ia	1913	E
Jones, William J.	IIb	1900	E
Jones, William J.	IIa	1901	E
Jordan, Frederic W.	IV	1910	E
Jorde, Linville T.	VIc	1910	E
Joyce, John	Vc	1909	E
Jury, Alfred E.	IV	1904	D
Kaler, Harold F.	VIb	1909	E
Kay, Harry P.	II	1909	D
Keleher, John J.	IIb	1903	E
Kellett, Irvine	II	1899	E
Kelley, Bernard J., Jr.	VIc	1909	E
Kelly, Michael H.	Ia	1902	E

\*Deceased



Name	Course	Class	Day or Evening
Kelly, Michael H.	IIIa	1907	E
Kennedy, William E.	VIa	1911	E
Kent, Arthur	VIb	1912	E
*Kent, Arthur	VIb	1912	E
Kent, Clarence L.	III-V	1906	D
Kent, Ernest J.	IIb	1902	E
Kenworthy, Joseph	Ia	1905	E
Keough, Wesley L.	II	1910	D
Kerrigan, Arthur J.	VIa	1912	E
Kershaw, Benn	Va	1909	E
Kershaw, Benn	Vc	1910	E
Kershaw, Samuel S.	IIb	1910	E
Kershaw, Samuel S.	Vb	1913	E
Kershaw, William E.	V	1904	E
Kidd, Thomas E.	IV	1906	E
Killerby, Walter	IIb	1901	E
Kimball, Irving D.	VI	1905	E
Kingsbury, Percy F.	IV	1901	D
Kirkpatrick, Lloyd A.	Ia	1913	E
Kirkpatrick, Lloyd A.	Ia	1914	E
Kirsch, Alfred O.	Vb	1907	E
Knowland, Daniel P.	IV	1907	D
Knowles, Frank E.	Ia	1903	E
Krause, George R.	VII	1910	E
Lachance, Melina	IIIb	1911	E
Laffert, August W.	IIIa	1906	E
Laffert, August W.	VII	1907	E
Lagerblad, Jarl	VII	1908	E
LaJeunesse, Joseph A.	IVa	1910	E
LaJeunesse, Joseph A.	IVc	1913	E
Lake, William F.	IIIa	1907	E
Lake, William F.	P. G. IIIa	1908	E
Lakeman, Fannie S.	IIIb	1900	D
Lamb, Arthur F.	II	1910	D
Lambert, Harry	IIb	1912	E
Lambert, Seth	IIb	1913	E
Lamont, Robert L.	II	1912	D
Lamont, Walter M.	IIb	1902	E
Lamson, George F.	I	1900	D
Lamson, George F.	VI	1905	E
Lane, John W.	I	1906	D
Lane, John W.	I-V	1907	D
Lang, William A.	Vc	1913	E
Langevin, Felix D.	VI	1904	E
Lapierre, Alderic S.	IIIa	1912	E
LaPorte, Philip J.	IVa	1912	E
LaPrise, Frank E.	IVa	1914	E
Laughlin, James K.	III	1909	D
Laurin, Erick T. L.	VIb	1914	E
Law, Alfred	IIb	1901	E
Lawliss, Augustine J.	V	1902	E
Lawrence, Charles	Ia	1903	E
Leach, John P.	I-V	1900	D
Leach, Joseph W.	V	1903	E
Learned, Frank E.	Va	1913	E
Learned, Frank E.	Vc	1914	E

\*Deceased

Name	Course	Class	Day or Evening
Leaver, Harold E.	IIb	1914	E
Leaver, Raymond J.	VIb	1913	E
Leck, Arthur J.	VII	1910	E
Ledoux, Blanche H.	IIIb	1910	E
Lee, Charles	Ia	1902	E
Lee, William H.	V	1905	D
Leitch, Harold W.	IV	1912	D
Leitch, Harold W.	IV	1914	D
Leith, Edwin E.	IIIa	1902	E
Leith, Joseph E.	Vb	1912	E
Leith, Joseph E.	IIIa	1914	E
Lemire, Arthur	Ia	1910	E
Lemire, Arthur	Va	1911	E
Leonard, Charles W.	VII	1913	E
Levi, Alfred S.	IV	1909	D
Lewis, Charles S.	VIa	1914	E
Lewis, LeRoy C.	IV	1908	D
Lewis, Walter S.	IV	1905	D
Libby, C. Robert	VI	1902	E
Lillis, Marvin H.	IV	1914	D
Linberg, Joseph F.	IVa	1911	E
Lincourt, Hector L.	VI	1903	E
Lincourt, Henry E.	VIb	1909	E
Linehan, Thomas W.	VII	1914	E
Linkletter, Alfred C.	VI	1905	E
Lockberg, John L.	VIId	1912	E
Logan, George H. S.	IV	1911	E
Looby, George A.	Vc	1914	E
Lord, Harry D.	IIIa	1904	E
Lord, Wilfred	IIIa	1901	E
Lord, Wilfred	IIb	1903	E
Lord, Wilfred	IIa	1904	E
Lovell, Charles E.	VI	1905	E
Lowe, Harry F.	Va	1913	E
Lowe, Harry F.	Vb	1914	E
Lowe, John C.	IIb	1912	E
Luce, Harry A.	VII	1914	E
Lucey, Edmund A.	II	1904	D
*McAlister, John W.	V	1899	E
McAuliffe, Patrick D.	VIb	1910	E
McBride, Robert G.	IIa	1904	E
McCann, Martin	Vb	1912	E
McCarthy, Joseph F.	IIIa	1906	E
McClure, Charles G.	VIb	1909	E
McCool, Frank L.	IV	1910	D
Macdonald, Chester W.	VIa	1912	E
MacDonald, John F.	Va	1914	E
McDonald, William A.	VIb	1913	E
McDonnell, William H.	I-V	1906	D
McElroy, Claude R.	VIId	1914	E
McElroy, Samuel H.	Vb	1910	E
McGill, William E.	VII	1908	E
*McGovern, James	VII	1908	E
McGowan, Annie C.	IIIb	1913	E
McGowan, Frank R.	VI	1914	D

\*Deceased

Name	Course	Class	Day or Evening
McGurn, James P.	VId	1913	E
Mack, Clarence P.	IIIa	1914	E
Mackay, Stewart	III	1907	D
McKenna, Hugh F.	IV	1905	D
McKenna, Jeremiah J.	Vb	1908	E
McLaughlin, Peter J.	Ia	1906	E
McLay, John	Vb	1906	E
McLay, John	IIb	1909	E
McManus, Hugh	V	1905	E
McNamara, Thomas	Vb	1911	E
Macnee, Forrest F.	IIb	1914	E
MacPherson, Wallace A.	III	1904	D
McQuade, Hugh B.	V	1901	E
Mabbett, Albert L.	IIIa	1910	E
Madden, Peter	Va	1909	E
Maden, Harry	IIb	1900	E
Maguire, Andrew F.	Vb	1913	E
Maguire, James H.	VI	1905	E
Maguire, James H.	Ia	1906	E
Mahoney, Dennis J.	Vb	1909	E
Mahoney, Joseph	Vc	1914	E
Mailey, Howard T.	II	1908	D
Maker, Isaac A.	Ia	1908	E
Manning, Frederick D.	IV	1910	D
Manning, James B.	IVa	1911	E
Manning, James B.	IVb	1913	E
Marjerison, Isaiah D.	II	1899	E
Marjerison, T. Sydney	IIIa	1907	E
Marjerison, T. Sidney	P. G. IIIa	1908	E
Marinel, Walter N.	I	1901	D
Marsden, Phillips B.	IVa	1911	E
Marshall, Fred K. R.	VI	1908	E
Martin, Harry W.	IV	1911	D
*Martin, John C., Jr.	IIa-b	1905	E
Martin, Willard E.	IIIa	1907	E
Mason, Archibald L.	VI	1909	D
Mason, Frederick A.	Ia	1903	E
Mather, Harold T.	VI	1913	D
Maxcy, Leo M.	VIc	1910	E
Maynard, Wilfred B.	VII	1913	E
Meadows, William R.	I	1904	D
Mears, Lewis N.	IVa	1914	E
Meek, Lotta (See Parker)			
Merchant, Edith C.	IIIb	1900	D
Merrill, Allan B.	IV	1911	D
Merrill, Edwin C.	VI	1904	E
Merriman, Earl C.	II	1907	D
Messiah, Hiram G.	Vb	1910	E
Metcalfe, Walter B.	IIb	1913	E
Michael, Joseph C.	Vb	1912	E
Michelmores, Harry	IIIa	1906	E
Michelmores, Harry	VII	1907	E
Midwood, Arnold J.	IV	1905	D
Miller, Emil H.	V	1904	E
Miller, Ernest P., Jr.	Ib	1913	E

\*Deceased

Name	Course	Class	Day or Evening
Milot, Aram A.	Vb	1914	E
Milot, Joseph E.	Vlc	1911	E
Minge, Jackson C.	I-V	1901	D
Minge, Jackson C.	IIIa	1901	E
*Moir, Alexander L.	IIIa	1899	E
*Moir, Alexander L.	P. G. IIIa	1903	E
Molloy, Andrew	V	1902	E
Molloy, Andrew	IIIa	1905	E
Molloy, Andrew	P. G. IIIa	1906	E
Molloy, Andrew	P. G. IIIa	1909	E
Molloy, Andrew	VId	1913	E
Monahan, Patrick H.	I	1905	D
Moore, Everett B.	IV	1911	D
Moore, Karl R.	VI	1904	E
Moorehouse, Thomas	IV	1901	D
Moorhouse, William R.	V	1901	E
Morris, Frank A.	I	1903	D
Morrison, Fred C.	IIIa	1903	E
*Mortenson, Carl W.	IIa	1908	E
*Mortenson, Carl W.	IIb	1906	E
Morton, Albert N.	VI	1903	E
*Mozley, Arthur	Vlb	1912	E
Muldoon, Joseph M.	II	1909	D
Mullen, Arthur T.	VId	1914	E
Mullen, Frank J.	I	1912	D
Munroe, Sydney P.	IIa	1906	E
Murphy, Cornelius D.	IIb	1911	E
Murphy, Howard H.	VI	1904	E
Murphy, John H.	Vc	1913	E
Murphy, Leo T.	IV	1913	D
Murray, James	II	1910	D
Murray, James A.	Vc	1909	E
Musard, Albert E., Jr.	Vc	1913	E
Musard, Henry A.	IIIa-IV	1903	E
Myers, James W.	VII	1907	E
Myers, James W.	IV	1903	D
Najarian, Garabed	IVa	1912	E
*Naylor, Charles	IIb	1907	E
Nelson, Charles E.	IIb	1900	E
Nelson, Ernest H.	IIa	1901	E
Nelson, Ernest H.	IIIa	1906	E
Nelson, Ernest H.	Ia	1909	E
Nelson, Ernest H.	Vc	1910	E
Nelson, Ernest H.	Ib	1913	E
Nelson, Ernest H.	Vb	1910	E
Nelson, Gustave A.	Ia	1911	E
Nelson, James A.	VId	1911	E
Nelson, Sigfred	IV	1909	D
Newall, J. Douglas	Ia	1911	E
Newall, Preston	IV	1906	D
Newcomb, Guy H.	Vlb	1911	E
Newsholme, Charles E.	IVa	1911	E
Nichol, Samuel J.	IVb	1914	E
Nichol, Samuel J.	Vb	1910	E
Nichols, Clarence W.	Vlb	1914	E
Nichols, Fernald H.			

\* Deceased

Name	Course	Class	Day or Evening
Nichols, Nathan A.	VIb	1911	E
Nichols, Raymond E.	VI	1910	D
Nicholson, Richard	IIb	1903	E
Nicoll, John	IVa	1910	E
Nicoll, John	IVb	1913	E
Niven, Robert S.	VI	1912	D
Noble, John T.	V	1899	E
Noble, John T.	IIIa	1901	E
Noonan, Denis T.	IIIa	1903	E
Notman, Frederick W.	Ia	1904	E
Nugent, Thomas A.	II-V	1899	E
Nugent, Thomas A.	VI	1902	E
Nutter, James R.	VI	1908	E
O'Brien, David A.	IV	1906	E
O'Brien, Frederick A.	VIb	1914	E
O'Brien, Michael F.	IIb	1907	E
O'Connell, Clarence E.	IV	1911	D
O'Donnell, John D.	I-V	1904	D
Ogley, Samuel A.	IIb	1900	E
O'Hara, William F.	IV	1904	D
O'Neill, Peter F.	IV	1905	E
Orrell, Ernest R.	VIId	1913	E
Orrell, Frank L.	VIb	1909	E
Orrell, Frank L.	IIb	1912	E
Orrell, Frank L.	Vb	1913	E
*Osbeck, William J.	IIIa	1908	E
Osgood, Charles F.	Ia	1900	E
Osgood, Charles F.	VI	1902	E
Overend, John	V	1905	E
Palm, Carl H.	VIa	1912	E
Palmer, G. Buel	IIIa	1903	E
Palmer, G. Buel	Vb	1909	E
Paquin, Joseph	VIa	1909	E
Paquin, Joseph	VIb	1910	E
Parker, B. Moore	I	1901	D
Parker, Everett N.	I-III-V	1904	D
Parker, Everett N.	I	1905	D
Parker, Harry C.	V	1900	D
Parker, John G.	Va	1914	E
Parker, Lotta Meek	IIIb	1907	D
Parkin, Prescott R.	Vb	1911	E
Parkis, William L.	I	1909	D
Parsons, Joseph G.	IIIa	1909	E
Patrick, Alexander	IIIa	1904	E
Patterson, Alfred H.	IIIa	1908	E
Pearson, Alfred H.	IV	1911	D
Pearson, Fred	VIa	1909	E
Pease, Chester C.	I	1909	D
Peck, Carroll W.	IV	1913	D
Pedler, William A.	Ia	1906	E
Pedler, William A.	IVa	1911	E
Peel, Hudson	IIb	1901	E
Pensel, George R.	IV	1913	D
Perkins, John E.	III	1900	D
Perkins, J. Dean	III	1908	D

\*Deceased



Name	Course	Class	Day or Evening
Perkins, Thomas, Jr.	Ia	1908	E
Perron, Francis J.	Vb	1911	E
Perry, Clarence R.	IIb	1911	E
Pettersson, Birger	VIa	1910	E
Petty, George E.	I-V	1903	D
Phelps, Mary I.	IIIb	1910	E
Picken, William T.	IIIa	1908	E
Pickles, Wilfrid	Va	1914	E
Pierce, Duncan H.	VII	1914	E
Pierce, Gordon J.	Vb	1914	E
Pihl, Christian E.	VI	1906	E
Pihl, Ingrid I.	IIIb	1912	E
Pihl, Mansfred M.	VIb	1914	E
Pillsbury, Ray C.	I	1913	D
Pinkham, Banford O.	VI d	1914	E
Pittendreigh, John M.	Ia	1906	E
Playdon, Louis C.	Ia	1914	E
Plumer, Paul T.	Vb	1908	E
Plummer, Elliott B.	IV	1913	D
Porter, George K., Jr.	IIIa	1907	E
Porter, George K., Jr.	P. G. IIIa	1908	E
Potter, Carl H.	I	1909	D
Potter, Richard W.	V	1902	E
Pottinger, James G.	II	1912	D
Pradel, Alois J.	III	1900	D
Pradel, Anna Walker	IIIb	1903	D
Preble, George A.	IIIa	1908	E
Preble, George A.	Va	1912	E
Preble, George A.	Vb-c	1913	E
Prescott, Walker F.	IV	1909	D
Prescott, William B.	Va	1912	E
Prince, Sylvanus C.	VI	1908	D
Proctor, Braman	IV	1908	D
Putnam, Leverett N.	IV	1910	D
Putnam, Philip C.	IV	1913	D
Quinn, James H.	VII	1913	E
Racicot, Marie E.	IIIb	1911	E
Ramsdell, Theodore E.	I	1902	D
Randall, William O.	IIb	1913	E
*Rasche, William A.	III	1903	D
Raymond, Charles A.	IV	1907	D
Read, Paul A.	VII	1907	E
Read, Paul A.	Va	1909	E
Reardon, Timothy H.	VI	1906	E
Redman, Henry S.	IIIa	1904	E
Redman, Henry S.	V	1905	E
Redman, Henry S.	Ia	1907	E
Redman, Henry S.	IV	1910	E
Redman, Henry S.	VIa	1912	E
Redman, Henry S.	Ib	1913	E
Redpath, Robert H.	VII	1913	E
Redpath, Robert H.	Vb	1914	E
Reed, Foster C. K.	VI	1904	E
Reed, Norman B.	I	1910	D
Reynolds, Eugene A.	VI	1906	E
Reynolds, Fred B.	II	1908	D

\*Deceased

Name	Course	Class	Day or Evening
Reynolds, Hiram L.	IIIa	1901	E
Reynolds, Isabel H.	III-V	1903	D
Reynolds, Isabel H.	P. G. III-V	1906	D
Reynolds, James J.	Vc	1913	E
Rhodes, Joseph E.	V	1904	E
Rich, Everett B.	III	1911	D
Richards, Francis G.	IIa	1906	E
Richardson, Richardson P.	I	1913	D
Riley, Edward T.	IIIa	1912	E
*Ritter, Alfred E.	IIb	1907	E
Robbins, John	IIb	1907	E
Roberson, Pat H.	I	1905	D
Roberts, Carrie I.	IIIb	1905	D
Robinson, Ernest W.	IV	1908	D
Robinson, James E.	VII	1911	E
Robinson, Ruddach P.	VII	1911	E
Robinson, Thomas	Ia	1909	E
Robinson, Thomas	Vc	1910	E
Robinson, William C.	III-V	1903	D
Robson, Frederick W. C.	IV	1910	D
Roche, Raymond V.	IV	1912	D
Rockwell, Henry D.	IIa	1903	E
Rockwell, Samuel F.	IIa	1902	E
Roesler, Alfred	IIIa	1914	E
Rogers, John F.	Ia	1911	E
Rollins, Henry E.	VII	1912	E
Rollins, Sidney R.	IIb	1913	E
Rooney, George W.	Ia	1904	E
Root, Francis X., Jr.	IIIa	1910	E
Routine, Francis E.	VIIb	1914	E
*Rowell, Herman C.	Ia-IIb	1900	E
Rowlands, Harold	Va	1911	E
Royds, James	Ia	1912	E
Rundlett, Arnold D.	VI	1912	D
Rushworth, Walter	VI	1906	E
Ryan, Edward P.	Ia	1909	E
Saalfrank, Joseph C.	IIIa	1908	E
Saunders, Edward B.	IIIa	1901	E
Saunders, Harold F.	IV	1909	D
Savage, Charles F.	IVa	1912	E
Scally, Edward	VI	1908	E
Scanlon, Edward J.	IIb	1901	E
Schermerhorn, George E.	Ia	1902	E
Schermerhorn, George E.	Va	1908	E
Schmidt, Hartman F.	IIb - VII	1914	E
Schofield, John S.	IIIa	1903	E
Schoon, Fenton	IIb	1903	E
Schubert, George J.	V	1906	E
Schubert, George J.	IIIa	1909	E
Schuerfeld, Harry W.	IIIa	1909	E
Schuster, William F.	VII	1908	E
Seddon, N. Graham	IIIa	1908	E
Semple, Alexander	IIIa	1908	E
Senior, George	Va	1906	E
Senior, George	Ia-Vc	1907	E

\*Deceased

Name	Course	Class	Day or Evening
Shackleton, John H.	IV	1908	E
Shackleton, John H.	Ia	1910	E
Shaffer, William A.	VId	1911	E
Shannon, Philip J.	V	1901	E
Sharpe, John R.	VI	1906	E
Shaw, James	V	1904	E
Shaw, William	VIa	1913	E
Shea, Francis J.	II	1912	D
Shearer, David D.	VII	1912	E
Shearer, David D.	Vb	1913	E
Sheppard, Byron H.	VI	1906	E
Shields, John J.	Va	1911	E
Sidebottom, Leon W.	IV	1911	D
Silcox, Arthur E.	Ia	1900	E
Silk, Frederick C. M.	IV	1905	E
Silk, Patrick E.	VII	1906	E
Simola, Emil J.	IIa-b	1905	E
Simoneau, Verner W.	VI	1908	E
Skidmore, Russell P.	VIIb	1912	E
Skinner, Clarence W.	IIIa	1905	E
Skinner, Clarence W.	P. G. IIIa	1906	E
Skinner, Clarence W.	VII	1907	E
Sleeper, Robert R.	IV	1900	D
Sleeper, Robert R.	VII	1913	E
*Smith, Albert A.	I	1899	D
Smith, Arthur	IIIa	1905	E
Smith, Arthur	P. G. IIIa	1906	E
Smith, Arthur	Va	1906	E
Smith, Arthur	Vc	1907	E
Smith, Arthur	P. G. IIIa	1909	E
Smith, Doane W.	II	1910	D
Smith, Edward	Ia	1904	E
Smith, Ernest B.	Vb	1907	E
Smith, Fred	IIb	1901	E
Smith, George A.	IIIa	1905	E
Smith, George A.	P. G. IIIa	1906	E
Smith, George A.	VII	1909	E
Smith, James	Vb	1907	E
Smith, John W.	IIb	1904	E
Smith, Leonard	VIa	1914	E
Smith, Percy H.	Vb	1907	E
Smith, Ralston F.	I	1904	D
Smith, Stephen E.	I	1900	D
Smith, Theophilus G., Jr.	IV	1910	D
Smith, William E.	IIIa	1905	E
Smith, William E.	P. G. IIIa	1906	E
Smith, William E.	VII	1907	E
Smith, William E.	P. G. IIIa	1909	E
Smith, William F.	VId	1912	E
Smith, William H.	IIb	1902	E
Snelling, Fred N.	II	1903	D
Snow, Fred L.	IV	1900	E
Soule, William N.	VId	1913	E
Spedding, Ephraim H.	IIIa	1899	E
Spiegel, Edward	V	1903	D

\* Deceased

Name	Course	Class	Day or Evening
Spurr, Albert R.	VII	1908	E
Spurr, James H., Jr.	IV	1908	E
Standish, John C.	IV	1911	D
Stanley, John R.	IIb	1911	E
Stearns, Orlo F.	IVa	1911	E
Steere, Samuel A.	Va	1914	E
Sterling, Walter	IIIa	1904	E
Stevens, Dexter	I	1904	D
Stevens, Frank W.	VI	1905	E
Stevens, Harold S.	IIIa	1912	E
Stevenson, Murray R.	III-V	1903	D
Stevenson, Robert P.	Ia	1912	E
Stevenson, William	II	1899	E
Stevenson, William	IIIa	1902	E
Stewart, Arthur A.	II	1900	D
Stewart, Charles	Va	1908	E
Stewart, George	Ia-IVa	1911	E
Stewart, George	Va	1914	E
Stewart, Walter L.	III	1903	D
Stewart, William W.	IV	1910	E
Stocks, Carl W.	VIa	1909	E
Stohn, Alexander C.	III-V	1906	D
Stokham, Burton I.	IV	1903	E
Stokham, Burton I.	P. G. IV	1904	E
Stokham, Ernest F.	IVa	1914	E
Stone, Ira A.	IV	1909	D
Stopherd, William H.	II-V	1899	E
Stopherd, William H.	VI	1902	E
Stopherd, William H.	IIIa	1905	E
Stopherd, William H.	P. G. IIIa	1906	E
Stopherd, William H.	P. G. IIIa	1909	E
Stopherd, William H.	VII	1910	E
Storer, Francis E.	II	1907	D
Stott, Bertram S.	Vb	1910	E
Stott, Samuel	IV	1910	E
Stronach, Irving N.	IV	1910	D
*Stursberg, Paul W.	II	1907	D
Sugden, Albert G.	IIIa	1912	E
Sugden, Albert G.	VII	1913	E
*Sullivan, Humphrey F.	Ia	1909	E
Sullivan, John D.	VI	1912	D
Sullivan, Michael F.	VIIb	1910	E
Sullivan, Michael F.	VIa	1913	E
Swan, Guy C.	II	1906	D
Swanson, Victor E.	IVa	1912	E
Swift, Edward S.	V	1899	E
Swift, Edward S.	Ia	1901	E
Swift, Edward S.	I	1902	D
Sykes, Alvin E.	VIa	1909	E
Sylvain, Charles E.	VI	1913	D
Syme, James F.	II	1900	D
Tarpey, John F.	IIa	1904	E
Taylor, Harold S.	VIIb	1912	E
Teichmann, Alfred A.	Vb	1908	E
Tennant, Joseph A.	VIIb	1911	E

\*Deceased

Name	Course	Class	Day or Evening
Thaxter, Joseph B., Jr.	II	1912	D
Thomas, Roland V.	I	1905	D
Thompson, Charles B.	VI	1904	E
Thompson, Everett L.	I	1905	D
Thompson, Henry J.	IV	1900	D
Tilton, Elliott T.	II	1899	D
Todd, Henry	VII	1910	E
Tonge, John	IV	1905	E
Tonge, Matthew	IIIa	1903	E
Toovey, Sidney E.	V	1904	D
Torpey, Henry K.	VIb	1914	E
Toshach, Reginald A.	II	1911	D
Towers, Frederic G.	Ia	1912	E
Tucker, John T.	Ia	1908	E
Tucker, John T.	Va	1909	E
Turgeon, Roderick	IVa	1912	E
Turner, Roscoe C.	IIb	1914	E
Twomey, Hugh	VIId	1914	E
Umpleby, Thomas B.	V	1902	E
Upton, Frank A.	Ia	1903	E
Varney, Manley H.	IIIa	1902	E
Varney, Manley H.	Ia	1903	E
Varnum, Arthur C.	II	1906	D
Varnum, Arthur C.	Vb	1907	E
Varnum, Arthur C.	P. G. IIIa	1908	E
Varnum, Arthur C.	VII	1909	E
Vause, John	Va	1912	E
Vogt, Alfred H.	IIIa	1902	E
Vogt, Alfred H.	IIb	1909	E
Vogt, Harry A.	Vb	1906	E
Wade, Frank J.	Vb	1911	E
Wahlberg, Einar S.	Ia	1907	E
Wainwright, Harold	IVa	1913	E
Walen, Ernest D.	VI	1913	D
Walen, Ernest D.	VI	1914	D
Walker, Alfred S.	II	1911	D
Walker, Anna G. (See Pradel)			
Walker, David	IIIa	1902	E
Walker, David	P. G. IIIa	1903	E
Walker, William, Jr.	VII	1906	E
Walsh, Michael L.	Ia	1909	E
Walton, Frank L.	Ia	1911	E
Ward, Bernard D.	IIIa	1911	E
Ward, Herbert H.	Vb	1912	E
Ward, James J.	VII	1906	E
Wardrobe, William L.	Ia	1900	E
Ware, Edward W.	IIIa	1909	E
Warren, Philip H.	II	1905	D
Waterhouse, Joseph	IV	1900	E
Waterworth, Frank W.	Vb	1907	E
Watson, Luther F.	IIb	1909	E
Watson, William	III	1911	D
Webb, Francis H.	V	1904	E
Webb, Francis H.	IIIa	1907	E
Webb, Frank H.	IV	1904	D
Webber, Arthur H.	IV	1901	D
Webber, John F.	IIIa	1907	E



Name	Course	Class	Day or Evening
Webber, John F.	P. G. IIIa	1908	E
Webster, Orrin H.	Ia	1912	E
Weigel, Frederick A.	VIb	1909	E
Weinz, W. Elliot	IV	1908	D
Welch, Benjamin L.	VIb	1910	E
Wesson, Paul B.	Ia	1901	E
Wheelock, Stanley H.	II	1905	D
*Whitcomb, Harry E.	Ia	1906	E
Whitcomb, Roscoe M.	IV	1910	D
White, Royal P.	II	1904	D
Whitehead, Bennett	IIb	1901	E
Whitehill, Warren H.	IV	1912	D
Whitman, William P.	IVa	1910	E
Whitman, William P.	IVb	1913	E
Whitney, Frederick A.	IV	1910	E
Whittaker, Thomas B.	IIb	1907	E
Whittaker, Thomas B.	IIb	1908	E
Wicks, Frederic M.	IIIa	1912	E
Wiggin, Leon M.	IIIa	1907	E
Wiggin, Leon M.	P. G. IIIa	1908	E
Wightman, William H.	IV	1906	D
Wilde, Thomas E.	IIa	1905	E
Wilkinson, Joseph	IIIa	1912	E
Wilkinson, Joseph	VII	1913	E
Willey, Frank S.	Ia	1901	E
Willgeroth, Henry J.	IIIa	1908	E
Williams, Allen R.	Ia	1910	E
Williams, Allen R.	Va	1911	E
Williamson, Isaac F.	IV	1901	E
Willmott, Herbert J.	VIa	1911	E
Wilmot, Joseph	IIIa	1908	E
Wilmot, William	IIIa	1899	E
Wilson, Calvin E.	IIb	1902	E
Wilson, George H.	IIb	1902	E
Wilson, John S.	II	1903	D
*Wilson, Walter E. H.	I-V	1904	D
Wilton, George H.	IIIa	1899	E
Wing, Charles T.	IIIa	1900	E
Wing, Charles T.	III	1902	D
Wingate, William H.	IV	1908	D
Wise, Paul T.	II	1901	D
Wiswall, Frank T.	V	1905	E
Wolf, William C.	Va	1907	E
Wolf, William C.	Vb	1908	E
Wolger, John J.	IIIa	1907	E
Wollin, Frederick W.	Va	1911	E
Wood, Arthur S.	Va	1912	E
Wood, Ernest H.	IV	1911	D
Wood, Herbert C.	I	1906	D
Wood, J. Carleton	IV	1909	D
Wood, Jonathan	Ia	1902	E
Wood, Jonathan	Va	1908	E
Woodbury, Eugene P.	VII	1914	E
Woodbury, W. Sanford	Ia	1900	E

\*Deceased

Name	Course	Class	Day or Evening
Woodcock, Eugene C.	II	1907	D
Woodies, Ida A.	IIIb	1900	D
Woodies, Ida A.	P. G. IIIb	1901	D
Woodman, Harry L.	I-III-V	1902	D
Woodruff, Charles B.	V	1906	D
Worthington, John A.	Ia	1910	E
Wright, Edward, Jr.	II	1905	D
Wright, Frederick J.	Vb	1911	E
Yare, John F.	Vb	1907	E
Yavner, Harry	II	1912	D
Young, Richard, Jr.	Va	1908	E
Young, Richard, Jr.	Vc	1909	E
Younger, Andrew	IIIa	1913	E
Younger, Andrew	VII	1914	E

## REGISTER OF GRADUATES

(P. G.) Indicates Post Graduate Course  
 (x) Indicates Last Known Address  
 (\*) Deceased

### Day Course, 1899

#### Diploma Graduates

Name	Course	Occupation
Bailey, Joseph W.	I	Superintendent, Davis Mills, Fall River, Mass.
Cuttle, James H.	II	Textile Analyst, J. H. Cuttle, New York City.
xFels, August B.	II	With William Fels, Inc., New York City.
xHarmon, Charles F.	I	Lowell, Mass.
*Smith, Albert A.	I	
xTilton, Elliott T.	II	With Western Electric Co., Boston, Mass.

#### Certificate Holders

\*Burrage, Katherine C.      IIIb

### Evening Course, 1899

#### Certificate Holders

*Berry, Frank M.	IIIa	
Binns, Heaton	II-V	Foreman, Worsted Department, Shuttleworth Bros. Co., Amsterdam, N. Y.
Broadbent, James T.	Ia	Agent and General Manager, Meritas Mills, New York City.
Collier, John	IIIa	Superintendent, Royalston Mills, South Royalston, Mass.
Crompton, Henry H.	II	Overseer, Worsted Yarns, Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIIa	General Manager, Merrimac Mills, Methuen, Mass.
Kellett, Irvine	II	Second Hand, Worsted Yarns, Pacific Mills, Lawrence, Mass.
*McAlister, John W.	V	
Marjerison, Isaiah D.	II	Overseer, Worsted Combing, Lower Pacific Mills, Lawrence, Mass.
*Moir, Alexander L.	IIIa	
xNoble, John T.	V	Overseer, Sawyer Woolen Mills, Dover, N. H.
Nugent, Thomas A.	II-V	Foreman, Yund, Kennedy & Yund, Amsterdam, N. Y.
Spedding, Ephraim H.	IIIa	Lowell, Mass.
Stevenson, William	II	Superintendent, Spray Woolen Mill Co., Spray, N. C.
Stopherd, William H.	II-V	With Saco-Lowell Shops, Lowell, Mass.

Name	Course	Occupation
Swift, Edward S.	V	Scholastic of the Society of Jesus, Woodstock College, Woodstock, Md.
Wilmot, William	IIIa	Designer, Hamilton Webb Co., Hamilton, R. I.
xWilton, George H.	IIIa	Overseer, M. T. Stevens and Sons Company, North Andover, Mass.

### Day Course, 1900

#### Diploma Graduates

Baldwin, Arthur L.	IV	Chemist, Monarch Chemical Laboratory, Lowell, Mass.
Barr, I. Walwin	I	Styler, F. U. Stearns & Co., New York City.
Bodwell, Henry A.	II	Superintendent, Smith and Dove Mfg. Co., Andover, Mass.
Brickett, Chauncey J.	II	Principal, School of Textiles, International Correspondence Schools, Scranton, Pa.
Lamson, George F.	I	With Society for Establishing Useful Manufactures, Paterson, N. J.
Perkins, John E.	III	Assistant Superintendent, S. N. and C. Russell Mfg. Co., Pittsfield, Mass.
xPradel, Alois J.	III	Superintendent, Montrose Woolen Mills, Woonsocket, R. I.
Sleeper, Robert R.	IV	Instructor in Dyeing, Lowell Textile School, Lowell, Mass.
Smith, Stephen E.	I	Head Instructor, Cotton Department, Lowell Textile School, Lowell, Mass.
Stewart, Arthur A.	I	Head Instructor, Finishing, Lowell Textile School, Lowell, Mass.
Syme, James F.	II	Assistant Treasurer, American Felt Co., Boston, Mass.
Thompson, Henry J.	IV	Dyer, Boston Rubber Shoe Co., Malden, Mass.

#### Certificate Holders

*Burrage, Katherine C.	P. G. IIIb	
Campbell, Laura E.	IIIb	Designer, Lowell, Mass.
xHarrison, Mrs. Amy H. (Goodhue)	IIIb	Dracut, Mass.
Lakeman, Fannie S.	IIIb	Designer, Salem, Mass.
xLeach, John P.	I-V	Foreman, Harriet Cotton Mills, Hender- son, N. C.
Merchant, Edith C.	IIIb	Supervisor of Drawing, Pepperell, Mass.
Parker, Harry C.	V	With George L. Parker, Boston, Mass.
Woodies, Ida A.	IIIb	Decorator, Lowell, Mass.

### Evening Course, 1900

#### Certificate Holders

Campbell, Albert D.	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Cawthra, Albert B.	IIb	Overseer, U. S. Bunting Co., Lowell, Mass.

Name	Course	Occupation
Colby, Arthur D.	Ia	Draftsman, Saco-Lowell Shops, Newton Upper Falls, Mass.
*Donnelly, James	Ia	
Elston, Frederick R.	IIIa	Superintendent, Sonnhill Worsted Co., Danielson, Conn.
Howard, John	V	Overseer, Weaving, Thos. Kent Mfg. Co., Clifton Heights, Pa.
Hutton, Clarence	V	Circulation Manager, Lord and Nagle Co., Boston, Mass.
Jones, William J.	IIb	Overseer, Worsted Spinning, U. S. Bunting Co., Lowell, Mass.
xMaden, Harry	IIb	North Adams, Mass.
xNelson, Ernest H.	IIb	Designer, Merrimack Mfg. Co., Lowell, Mass.
Ogley, Samuel A.	IIb	Overseer, Worsted Spinning, Steere Worsted Mills, Providence, R. I.
Osgood, Charles F.	Ia	Draftsman, General Electric Company, Lynn, Mass.
*Rowell, Herman C.	Ia-IIb	
Silcox, Arthur E.	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Snow, Fred L.	IV	Granite Contractor, Snow & Horsfall, Lowell, Mass.
Wardrobe, William L.	Ia	
xWaterhouse, Joseph	IV	Section Hand, Merrimack Mfg. Company, Lowell, Mass.
Wing, Charles T.	IIIa	Designer, Middlesex Mfg. Company, Lowell, Mass.
Woodbury, W. Sanford	Ia	Superintendent of Carding, Warner Mills and American Textilose Co., Newburyport, Mass.

### Day Course, 1901

#### Diploma Graduates

xBuchan, Donald C.	II	Assistant Superintendent, Stevens Mills, North Andover, Mass.
Currier, John A.	II	Superintendent, Pentucket Mills, M. T. Stevens and Sons Co., Haverhill, Mass.
Ewer, Nathaniel T.	IV	Chemist, American Dyewood Co., Chester, Pa.
Foster, Clifford E.	II	Superintendent, J. T. Bailey Co., Philadelphia, Pa.
Kingsbury, Percy F.	IV	Overseer, Color Dept., Merrimack Mfg. Co., Lowell, Mass.
Marinel, Walter N.	I	In Automobile Business, North Chelmsford, Mass.
Moorhouse, William R.	IV	Chemist, Cassella Color Co., Boston, Mass.
Parker, B. Moore	I	Instructor, Carding and Spinning, A. and M. College, West Raleigh, N. C.
Webber, Arthur H.	IV	Chemist and Dyer, Melville Color Co., Beverly, Mass.
Wise, Paul T.	II	General Manager, Chelsea Fibre Mills, Brooklyn, N. Y.



Certificate Holders		
Name	Course	Occupation
Bradley, Richard H.	V	Second Hand, Hargreaves Mill No. 2, Fall River, Mass.
xHarrison, Mrs. Amy H. (Goodhue)	P. G. IIb	See Day, 1900.
xMinge, Jackson C.	IV	Treasurer, Minge Mfg. Co., Demopolis, Ala.
Woodies, Ida A.	P. G. IIIb	See Day, 1900.

### Evening Course, 1901

Certificate Holders		
Name	Course	Occupation
Aspinwall, William	IIb	Coats Thread Mill, Pawtucket, R. I.
*Berry, Frank M.	V	
xBrooks, Noah	IIIa-V	Lowell, Mass.
xBurghardt, Paul C.	IIa	Second Hand, Card Room, Merrimack Woolen Co., Lowell, Mass.
Buzzell, William O.	IIIa	Overseer, Weaving, Dartmouth Mfg. Corp., New Bedford, Mass.
Cheetham, John James	IIIa	Overseer, Cabot Mfg. Co., Brunswick, Me.
Chippindale, Ernest W.	IIb	Pile Wire Maker, Frank Parker Pile Wire Co., Lowell, Mass.
Cowdell, Herbert	V	With Ipswich Mills, Lowell, Mass.
*Davis, Henry	IIb	
xDonovan, Daniel F.	IIa	Second Hand, Woolen Carding, Yonkers, N. Y.
Evison, William A.	V	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
xFarrell, Thomas	IIa	Woolen Spinner, Stirling Mills Lowell, Mass.
xFrame, William C.	V	Overseer, Johnson & Johnson, New Bruna- swick, N. J.
Gagan, John H.	V	Clinton, Mich.
Grant, Archibald	IIb	Lowell, Mass.
Grouke, Michael	IIb	Overseer, Worsted Drawing, Bigelow Car- pet Company, Lowell, Mass.
Hill, Daniel	IIb	Overseer, Passaic Worsted Spinning Co., Passaic, N. J.
Hitchcock, Thomas B.	Ia-IIa-IIIa	With International Cotton Mills Corpora- tion, Boston, Mass.
xHolgate, Charles H.	IIa	With A. R. Andrews, Boston, Mass.
Hunter, Ralph	IIIa	Salesman, Hall, Hartwell and Company, New York City.
Jones, William J.	IIa	See Evening, 1900.
Killerby, Walter	IIb	Overseer, Park Worsted Mill, Lowell, Mass.
Law, Alfred	IIb	Overseer, Arlington Mills, Lawrence, Mass.
Lord, Wilfred	IIIa	Assistant Superintendent, Worsted Dept., Pacific Mills, Lawrence, Mass.
McQuade, Hugh B.	V	With Bigelow-Hartford Carpet Company, Lowell, Mass.

Name	Course	Occupation
Minge, Jackson C.	IIIa	See Day, 1901.
xMorris, Frank A.	V	Loomfixer, Lowell, Mass.
Nelson, Ernest H.	IIa	See Evening, 1900.
Noble, John T.	IIIa	See Evening, 1899.
Peel, Hudson	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Reynolds, Hiram L.	IIIa	Agent, Saunders Cotton Mills, Saundersville, Mass.
xSaunders, Edward B.	IIIa	Salesman, Remington Typewriter Co., Fall River, Mass.
Scanlon, Edward J.	IIb	In business, Lawrence, Mass.
Shannon, Philip J.	V	Die Maker, Tubular Rivet and Stud Company, Wollaston, Mass.
*Smith, Fred	IIb	
Swift, Edward S.	Ia	See Evening 1899.
Wesson, Paul B.	Ia	Mechanical Superintendent, Wright Wire Co., Palmer, Mass.
Whitehead, Bennett	IIb	Overseer, Wood Worsted Mills, Lawrence, Mass.
xWilley, Frank S.	Ia	Second Hand, Picking and Carding, Pacific Mills, Lawrence, Mass.
Williamson, Isaac F.	IV	Boss Dyer, Hamilton Mfg. Co., Lowell, Mass.

### Day Course, 1902

#### Diploma Graduates

Burnham, Frank E.	IV	Colorist, Schoellkopf Hartford & Hanna Co., Buffalo, N. Y.
Carter, Robert A.	IV	Textile Chemist, Roessler & Hasslacher Chemical Company, New York City.
Craig, Clarence E.	III	Derry, N. H.
Haskell, Walter F.	IV	Overseer of Dyeing, Dana Warp Mills, Westbrook, Me.
Ramsdell, Theodore E.	I	Agent, Monument Mills, Housatonic, Mass.
Swift, Edward S.	I	See Evening, 1899.
Wing, Charles T.	III	See Evening, 1900.

#### Certificate Holders

Curran, Charles E.	II-III-V	Head Designer, Wood Worsted Mills, Lawrence, Mass.
xFerguson, Arthur F.	I	Head of Textile Dept., Rhode Island School of Design, Providence, R. I.
Harris, George S.	I	Agent, Lanett Cotton Mills, Lanett, Ala.
Holgate, Benjamin	III	Cost Accountant, Boott Mills, Lowell, Mass.
Woodman, Harry L.	I-III-V	Draftsman, Saco-Lowell Shops, Lowell, Mass.

# Evening Course, 1902

## Certificate Holders

Name	Course	Occupation
xAdams, William R.	IIa	Pressman, Stevens Mills, No. Andover, Mass.
Barlow, Robert	V	Lowell, Mass.
Binns, Heaton	VI	See Evening, 1899.
Bowring, George P. B.	VI	Optometrist, Lowell, Mass.
*Brainerd, Irving L.	Ia	
xBurghardt, Edward S.	IIa	Lawrence, Mass.
Buzzell, William O.	P. G. IIIa	See Evening, 1901.
Cheetham, John James	P. G. IIIa	See Evening, 1901.
Collier, John	P. G. IIIa	See Evening, 1899.
xCowdrey, Charles E.	V	Overseer, Talbot Mills, North Billerica, Mass.
xCremmin, Daniel J.	Ia	Second Hand, Boott Mills, Lowell, Mass.
xDonnellan, Frank T.	IIa	Lowell, Mass.
Dudley, George E.	Ia	Securities Salesman, International Correspondence Schools, Scranton, Pa.
Ferguson, Thomas	V	Overseer, Boott Mills, Lowell, Mass.
Field, Charles W.	VI	Carpenter and Builder, Boston, Mass.
xForrest, Fred G.	IIa	Finishing Room, Middlesex Co., Lowell, Mass.
Fortune, David A.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	P. G. IIIa	See Evening, 1899.
xGood, Henry	Ia	Providence, R. I.
xHaigh, Walter	IIIa	U. S. Bunting Co., Lowell, Mass.
xHaworth, Joseph	VI	Travelling Mechanical Engineer, C. G. Sargent's Sons Corp., Graniterville, Mass.
Hogan, James A.	V	Hogan Bros., Lowell, Mass.
Hoyle, Edward	IIb	President and Manager, Allerton Worsted Mills, Lowell, Mass.
Johnson, Ernest A.	IIa-b	Superintendent, Washington Mills, Lawrence, Mass.
Kelly, Michael H.	Ia	Overseer, Appleton Co., Lowell, Mass.
Kent, Ernest J.	IIb	Section Hand, English Drawing, Lower Pacific Mills, Lawrence, Mass.
Lamont, Walter M.	IIb	Agent, Wood Worsted Mill, Lawrence, Mass.
Lawliss, Augustine J.	V	Lowell, Mass.
Lee, Charles	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Leith, Edwin E.	IIIa	Superintendent, Thos. Kent Mfg. Co., Clifton Heights, Pa.
Libby, C. Robert	VI	Assistant Engineer, Locks & Canals, Lowell, Mass.
Molloy, Andrew	V	In City Water Department, Lowell, Mass.
Nugent, Thomas A.	VI	See Evening, 1899.
Osgood, Charles F.	VI	See Evening, 1900.
Potter, Richard W.	V	Overseer, Weaving, Massachusetts Cotton Mills, Lowell, Mass.
xRockwell, Samuel F.	IIa	Superintendent, Mule Dept., Davis and Furbur Machine Co., No. Andover, Mass.
Schermerhorn, George E.	Ia	Superintendent, Chipman Mfg. Co., Easton, Pa.

Name	Course	Occupation
xSmith, William H.	IIb	Stamp Clerk, Post Office, Lawrence, Mass.
Stevenson, William	IIIa	See Evening, 1899.
Stopherd, William H.	VI	See Evening, 1899.
Umpleby, Thomas B.	V	Designer, Stanley Woolen Company, Uxbridge, Mass.
Varney, Manley H.	IIIa	Superintendent, Finishing Dept., Amoskeag Mfg. Co., Manchester, N. H.
Vogt, Alfred H.	IIIa	Designing Dept., George E. Kunhardt, Lawrence, Mass.
Walker, David	IIIa	Overseer, Burlington Mills, Winooski, Vt.
Wilson, Calvin E.	IIb	Overseer, F. A. Straus Co., Trenton, N. J.
Wilson, George H.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Wood, Jonathan	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.

### Day Course, 1903

#### Diploma Graduates

Bloom, Wilfred N.	IV	Buyer, Riker Hegeman, New York City.
Campbell, Orison S.	II	Felt Supervisor, Canadian Consolidated Felt Co., Ltd., Berlin, Ont.
Chamberlin, Frederick E.	I	Overseer of Spinning, Monument Mills, Housatonic, Mass.
Emerson, Frank W.	II	Agent, Moosup Mills, Moosup, Conn.
xEvans, Alfred W.	III	Arlington Mills, Lawrence, Mass.
Evans, William R.	III	Foreman, Durgin Shoe Co., Haverhill, Mass.
Ferguson, Arthur F.	I	See Day, 1902.
xFuller, George	I	Associate Editor, American Wool and Cotton Reporter, New York City.
xGerrish, Walter	III	With Allen Lane Co., Boston, Mass.
Morrison, Fred C.	I	Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
Najarian, Garabed	IV	Overseer of Dyeing, Monument Mills, Housatonic, Mass.
*Rasche, William A.	III	
Snelling, Fred N.	II	With American Express Co., Haverhill, Mass.
xStewart, Walter L.	III	Cotton Goods Converter, Charles Kohlman & Co., Inc., New York City.
Wilson, John S.	II	Manager, Union Square Dept., Germania Life Insurance Co., New York City.

#### Certificate Holders

Bennett, Edward H.	V	Publisher, F. P. Bennett and Co., Inc., Boston, Mass.
Campbell, Louise P.	IIIb	Designer, Winchester, Mass.
Holgate, Benjamin	V	See Day, 1902.
Hutton, Clarence	III	See Evening, 1900.
Petty, George E.	I-V	Electric Sales Agent, G. E. Petty, Greensboro, N. C.
Pradel, Mrs. A. J. (Walker)	IIIb	Woonsocket, R. I.



Name	Course	Occupation
xReynolds, Isabel H.	III-V	Clerk, Arlington Mills, Lawrence, Mass.
Robinson, William C.	III-V	Inspector, H. F. Livermore & Co., Boston, Mass.
xSpiegel, Edward	V	In business, New York City.
Stevenson, Murray R.	III-V	Common Sense Gum Co., New York City.

### Evening Course, 1903

#### Certificate Holders

Adams, Henry S.	IIa	Treasurer, The Springstein Mills, Chester, S. C.
Balmforth, James H.	IIa	Postal Clerk, P. O., Bloomfield, N. J.
Barry, Edward J.	IIIa	Overseer, Salmon Falls Mfg. Co., Salmon Falls, N. H.
Bastow, Henry	IIIa	Textile Inspector, Quartermaster's Dept., Philadelphia, Pa.
xBaxter, Alvah J.	IIa	Clerk, Wood Worsted Mills, Lawrence, Mass.
Byam, Walter S.	VI	Clerk, Saco-Lowell Shops, Lowell, Mass.
xCady, Dennis J.	V	Loomfixer, Washington Mills, Lawrence, Mass.
Donnellan, Frank T.	V	See Evening, 1902.
Flynn, John J.	VI	Assistant Engineer, City of Lowell Fire Dept., Lowell, Mass.
French, Mrs. Martha B. (Balmforth)	IIIa	Lowell, Mass.
Garner, William	IIIa	Order Clerk and Telegrapher, Warren Bros. Co., East Cambridge, Mass.
Gaunt, Alfred C.	IIa	See Evening, 1899.
Goodchild, George	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Gray, Finley M.	VI	Clerk, Merrimack Mfg. Co., Lowell, Mass.
xHiggins, James A.	IIa	Spinner, Talbot Mills, No. Billerica, Mass.
Howard, John	IIIa	See Evening, 1900.
Hunter, Ralph	V	See Evening, 1901.
Jennings, James J.	IIIa	Overseer of Weaving, Jenckes Spinning Co., Pawtucket, R. I.
Johnson, Samuel L.	V	Overseer, Weaving, Walworth Bros., Lawrence, Mass.
xKeleher, John J.	IIb	Overseer, Drawing Dept., Prospect Mill, Lawrence, Mass.
Knowles, Frank E.	Ia	Inspector, Factory Mutual Insurance Co., Boston, Mass.
xLawrence, Charles	Ia	Overseer, Mule Spinning, Dartmouth Corp., New Bedford, Mass.
xLeach, Joseph W.	V	Designer, Pacific Mills, Lawrence, Mass.
Lincourt, Hector L.	VI	Draftsman, United Shoe Machinery Co., Beverly, Mass.
Lord, Wilfred	IIb	See Evening, 1901.
xMason, Frederick A.	Ia	Mule Spinner, Saxony Worsted Mills, Newton, Mass.
*Moir, Alexander L.	P. G. IIIa	
*Mortenson, Carl W.	IIIa	
*Mozley, Arthur	VI	
Myers, James W.	IIIa-IV	Assistant Superintendent, U. S. Bunting Co., Lowell, Mass.



Name	Course	Occupation
Nicholson, Richard	I Ib	Section Hand, Arlington Mills, Lawrence, Mass.
Noonan, Denis T.	IIIa	Superintendent, Berkshire Woolen & Worsted Co., Pittsfield, Mass.
Palmer, G. Buel	IIIa	Proprietor and Manager, Cross Awning Co., Lowell, Mass.
Rockwell, Henry D.	IIa	Clerk, Davis and Furber Machine Co., No. Andover, Mass.
Schofield, John S.	IIIa	Designer, Berkshire Woolen and Worsted Co., Pittsfield, Mass.
Schoon, Fenton	I Ib	Section Hand, Worsted Drawing, Farr Alpaca Co., Holyoke, Mass.
xStokham, Burton I.	IV	Chemist, Bigelow-Hartford Carpet Company, Lowell, Mass.
xTonge, Matthew	IIIa	Weaver, Dartmouth Mfg. Co., New Bedford, Mass.
Upton, Frank A.	Ia	Consulting Engineer, H. C. Raynes, Inc., Boston, Mass.
Varney, Manley H.	Ia	See Evening, 1902.
Walker, David	P. G. IIIa	See Evening, 1902.

### Day Course, 1904

#### Diploma Graduates

Abbott, Edward M.	II	Vice-President and Agent, Abbott Worsted Co., Graniteville, Mass.
Baldwin, Frederick A.	II	Vice-President and Secretary-Treasurer, Walter Blue & Co., Ltd., Sherbrooke, P. Q., Canada.
Clapp, F. Austin	II	With Dunmore Worsted Co., Inc., New York City.
Clogston, Raymond B.	IV	Overseer, Dyeing, Merrimack Mfg. Co., Lowell, Mass.
Culver, Ralph F.	IV	Ayer, Mass.
xCutler, Benjamin W., Jr.	III	With Anglo-American Cotton Products Co., New York City.
Dewey, James F.	II	Superintendent, Dewey's Mills, Quechee, Vt.
xDonald, Albert E.	II	Assistant Superintendent, Uxbridge Worsted Co., Uxbridge, Mass.
xJury, Alfred E.	IV	Chemist, Wells and Richardson Company, Burlington, Vt.
Lucey, Edmund A.	II	Industrial Engineer, H. L. Gantt, New York City.
MacPherson, Wallace A.	III	Designer, Waskanut Mills, Farnumsville, Mass.
Meadows, William R.	I	Assistant Instructor, Carding and Spinning, Clemson Agricultural College, Clemson College, S. C.
Stevens, Dexter	I	Superintendent, Esmond Mills, Esmond, R. I.
Webb, Frank H.	IV	Chemist, Washington Mills, Lawrence, Mass.
White, Royal P.	II	Agent, Stirling Mills, Lowell, Mass.

Name	Course	Occupation
<b>Certificate Holders</b>		
xHalsell, Elam R.	I-V	Overseer of Carding, Warren Mfg. Co., West Warren, Mass.
Horsfall, George G.	II-III-V	Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
Jones, Everett A.	III	Superintendent, Nye and Wait Carpet Co., Auburn, N. Y.
xO'Donnell, John D.	I-V	Clerk, Travers Bros. Co., New York City.
O'Hara, William F.	IV	With Read, Holliday & Sons, Ltd., Boston, Mass.
Parker, Everett N.	I-III-V	Manufacturer, Parker Spool and Bobbin Company, Lewiston, Me.
Smith, Ralston F.	I	Sales Manager, The Corday and Gross Co., Cleveland, Ohio.
xToovey, Sidney E.	V	Bookkeeper, Faneuil Hall Markets, Boston, Mass.
*Wilson, Walter E. H.	I-V	

### Evening Course, 1904

<b>Certificate Holders</b>		
xAdams, Michael E.	VI	Local Manager, Lowell Storage Warehouse Co., Lowell, Mass.
Balmforth, James H.	IIa-b	See Evening, 1903.
Balmforth, William F.	VI	East Orange, N. J.
xBarker, John P.	V	Peacedale, R. I.
Barrington, John A.	IV	With Kalle Color & Chemical Co., New York City.
xBoucher, John L.	VI	Lowell, Mass.
xButler, Benjamin O.	VI	Lowell, Mass.
xCallahan, Patrick A.	VI	With Lower Pacific Mills, Lawrence, Mass.
Cheetham, John Joseph	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Conley, Frederick A.	VI	Picker Expert, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Connors, Edward F.	VI	Draftsman, Locks and Canals, Lowell, Mass.
Davis, Prentice T.	Ia	Overseer, D. Mackintosh & Sons Co., Holyoke, Mass.
Delmage, Edward R.	IIIa	With Globe Woolen Mills, Utica, N. Y.
xDempsey, John W.	IIa	Photographer, The Dempsey Studio, Ayer, Mass.
Donahue, Michael F.	VI	With Saco-Lowell Shops, Lowell, Mass.
Doole, George L.	VI	Clerk, U. S. Bunting Co., Lowell, Mass.
Dooley, Edward W.	VI	Sign Writer, The Kimball System, Lowell, Mass.
Duggan, Francis P.	VI	Assistant Shipping Clerk, U. S. Cartridge Co., Lowell, Mass.
Frank, Emil M.	IIIa	With Henry Bauer, Lawrence, Mass.
Gaunt, Alfred C.	IIb	See Evening, 1899.
xHempel, Frank	V	Signal Dept., Boston & Maine Railroad, Lawrence, Mass.
Higgins, James A.	IIa-b	See Evening, 1903.
Hoyle, Joseph	IIb	Overseer, U. S. Worsted Co., No. Chelmsford, Mass.

Name	Course	Occupation
Jeannotte, Arthur	VI	Lowell, Mass.
Kershaw, William E.	V	Monotype Machinist, Courier-Citizen Co., Lowell, Mass.
Langevin, Felix D.	VI	Superintendent, Kitson Division, Saco-Lowell Shops, Lowell, Mass.
Lord, Harry D.	IIIa	Selling Agent, Saco-Lowell Shops, Saco, Me.
Lord, Wilfred	IIa	See Evening, 1901.
xMcBride, Robert G.	IIa	Mule fixer, Merrimack Woolen Mills, Lowell, Mass.
Merrill, Edwin C.	VI	Assistant Engineer, Eng. Dept., City Hall, Lawrence, Mass.
xMiller, Emil H.	V	Charge of Supply Dept., Lower Pacific Mills, Lawrence, Mass.
Moorehouse, Thomas	VI	Electrician, Arlington Mills, Lawrence, Mass.
Murphy, John H.	VI	Secretary, Board of Trade, Lowell, Mass.
Notman, Frederick W.	Ia	Clerk, Massachusetts Cotton Mills, Boston, Mass.
xPatrick, Alexander	IIIa	Omaha, Neb.
Redman, Henry S.	IIIa	In charge of Shipping Office, Stark Mills, Manchester, N. H.
xReed, Foster C. K.	VI	Steam Engineer, Farwell Bleachery, Lawrence, Mass.
xRhodes, Joseph E.	V	Chicago, Ill.
Rooney, George W.	Ia	Superintendent, Cotton Yarn Mill, N. H. Spinning Mills Co., Penacook, N. H.
Shaw, James	V	Loomfixer, Lowell, Mass.
Smith, Edward	Ia	Overseer, Bourne Mills, Fall River, Mass.
Smith, John W.	IIb	Automobile Machinist, Peerless Motor Car Company of New England, Boston, Mass.
xSterling, Walter	IIIa	New Bedford, Mass.
Stokham, Burton I.	P. G. IV	See Evening, 1903.
xTarpey, John F.	IIa	With Merrimack Mfg. Co., Lowell, Mass.
Thompson, Charles B.	VI	Clerk, B. and M. Railroad, Lowell, Mass.
Webb, Francis H.	V	With H. R. Barker Co., Lowell, Mass.

### Day Course, 1905

	Diploma	Graduates
Adams, Henry S.	I	See Evening, 1903.
Boyd, George A.	I	Accountant, Harmony Mills, Boston, Mass.
Carr, George E.	I	Efficiency Man, Alb. & E. Henkels, Bridgeport, Conn.
Cole, James T.	II	Superintendent, Industrial Dept., Mass. Commission for Adult Blind, Cambridge, Mass.
Dillon, James H.	III	Landscape and Architectural Designer, Park and Recreation Dept., Boston, Mass.
Harris, Charles E.	I	President and General Manager, Harris Garage and Machine Co., Easthampton, Mass.

Name	Course	Occupation
Hollings, James L.	I	Examiner of Cottons, U. S. Appraisers Dept., New York City.
Hook, Russell W.	IV	Chemist, Arthur D. Little, Inc., Boston, Mass.
Jones, Everett A.	III	See Day, 1904.
Lewis, Walter S.	IV	Chief of Textile Division, National Bureau of Standards, Washington, D. C.
McKenna, Hugh F.	IV	Chemist, United Indigo and Chemical Co., Ltd., Chicago, Ill.
Midwood, Arnold J.	IV	Salesman, Levinstein and Company, Boston, Mass.
Moore, Everett B.	I	Manager and Buyer, Chadbourne and Moore, Chelsea, Mass.
Parker, Everett N.	I	See Day, 1904.
Thompson, Everett L.	I	Treasurer, The Direct Hosiery Co., Boston, Mass.
Warren, Philip H.	II	Superintendent, Hopeville Mfg. Co., Worcester, Mass.
Wheelock, Stanley H.	II	Superintendent, Stanley Woolen Company, Uxbridge, Mass.

#### Certificate Holders

Arundale, Henry B.	II-III-V	Director, Textile School, So. Manchester, Conn.
Conklin, Jennie G.	IIIb	Commercial Designer, Boston, Mass.
Curtis, William L.	II	With G. E. & H. F. Habich Co., Boston, Mass.
xHunt, Chester L.	III	Machinist, United Shoe Machinery Co., Beverly, Mass.
Lee, William H.	V	Treasurer, Lee's Wool Shop, Holyoke, Mass.
Roberson, Pat H.	I	With James R. Roberson and Son, Cropwell, Ala.
Roberts, Carrie I.	IIIb	Designer, Lowell, Mass.
xThomas, Roland V.	I	Lowell, Mass.
Wright, Edward, Jr.	II	Assistant Engineer, Mass. State Board of Health, Boston, Mass.

#### Evening Course, 1905

##### Certificate Holders

xBake, Herbert	IIIa	Designer, Walworth Brothers, Lawrence, Mass.
Bastow, Henry	V	See Evening, 1903.
Bell, Frederick W.	IIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Bowie, Samuel A.	VI	Chief Engineer, Pacific Mills, Lawrence, Mass.
xBrown, James P.	IIIa	Insurance Agent, Metropolitan Life Insurance Co., Lowell, Mass.
xBryant, Ernest L.	VI	Clerk, C. A. Templeton, Inc., Waterbury, Conn.
xBurke, Thomas F.	Ia	Lowell, Mass.
Burns, Edward J.	IV	Tester, U. S. Cartridge Company, Lowell, Mass.



Name	Course	Occupation
Burns, James E.	IV	Overseer, Testing Dept., U. S. Cartridge Co., Lowell, Mass.
Caron, Cleophas	Ia	Overseer, Ring Spinning Dept., Queen City Cotton Co., Burlington, Vt.
Collins, John A.	IIa-b	Secretary, Mutual Boiler Insurance Company, Boston, Mass.
Cook, Cheney E.	IIIa	With Winslow Bros. and Smith Company, Boston, Mass.
Custer, James J. E.	V	Letter Carrier, Lowell, Mass.
Dana, Clarence A.	VI	Draftsman, Saco-Lowell Shops, Lowell Mass.
Dick, Hugo P.	IIIa	Designer, Merrimack Mfg. Co., Lowell, Mass.
*Dimlick, Benjamin C.	IIIa	
Erbe, Gustave	VI	Foreman, J. L. Thomason Mfg. Company, Waltham, Mass.
Foster, Sherwood L.	Ia	Lowell, Mass.
xFrench, Ernest J.	Ia	Windsor, Vt.
xGay, Earle B.	Ia	Second Hand Carding, Dana Warp Mills, Westbrook, Me.
Goodchild, George	VI	See Evening, 1903.
Harder, Elmer E.	VI	Janitor, Highland School, Lowell, Mass.
Haven, George W.	IIIa	Of Blake and Stearns, Boston, Mass.
Howard, Thomas	V	Overseer, T. Martin and Bro. Mfg. Co., Lowell, Mass.
xHunt, Herbert R.	VI	Assistant Draftsman, DeLamar's Copper Refining Co., Chrome, N. J.
Hunton, Lewis G.	IV	Shipping Clerk, C. I. Hood Co., Lowell, Mass.
xKenworthy, Joseph	Ia	Second Hand, Boott Mills, Lowell, Mass.
Kimball, Irving D.	VI	With Saco-Lowell Shops, Lowell, Mass.
Lamson, George F.	VI	See Day, 1900
Linkletter, Alfred C.	VI	Linkletter, P. E. I.
xLovell, Charles E.	VI	Los Angeles, Cal.
xMcManus, Hugh	V	With Middlesex Co., Lowell, Mass.
Maguire, James H.	VI	Efficiency Engineer, Saco-Lowell Shops, Lowell, Mass.
*Martin, John C., Jr.	IIa-b	
Molloy, Andrew	IIIa	See Evening, 1902.
O'Neill, Peter F.	IV	Superintendent, Standard Processing Co., Chattanooga, Tenn.
xOverend, John	V	Hand Dresser, Arlington Mills, Lawrence, Mass.
Redman, Henry S.	V	See Evening, 1904.
Silk, Frederick C. M.	IV	Color Passer and Pattern Starter, Bigelow-Hartford Carpet Co., Lowell, Mass.
xSimola, Emil J.	IIa-b	Finland.
xSkinner, Clarence W.	IIIa	With Brightwood Mfg. Co., No. Andover, Mass.
xSmith, Arthur	IIIa	Designer, Pemberton Mills, Lawrence, Mass.
xSmith, George A.	IIIa	Superintendent, Ludlow Manufacturing Association, Ludlow, Mass.
xSmith, William E.	IIIa	Clerk, Kennedy & Co., Lawrence, Mass.
Stevens, Frank W.	VI	Assistant Engineer, Locks & Canals, Lowell, Mass.
Stopherd, William H.	IIIa	See Evening, 1899.



Name	Course	Occupation
Tonge, John	IV	Salesman, Dyestuffs and Chemicals, Read, Holliday & Sons, Ltd., Providence, R. I.
Wilde, Thomas E.	IIa	Proprietor, Jeremiah Clark Machinery Co., Lowell, Mass.
xWiswall, Frank T.	V	Cost Clerk, Geo. E. Kunhardt, Lawrence, Mass.

### Day Course, 1906

Diploma	Graduates
*Avery, Charles H.	II
Bradford, Roy H.	II Assistant Superintendent, Smith and Dove Mfg. Company, Andover, Mass.
Churchill, Charles W.	III Vice-President and Treasurer, The Granby Elastic Web Co., Ltd., Granby, Quebec, Canada.
Cole, Edward E.	IV Reporter, Bradstreet Co., Boston, Mass.
Currier, Herbert A.	I Cotton Yarn Salesman, William Whitman & Co., New York City.
Curtis, Frank M.	I Salesman, Wm. Curtis Sons Co., Boston, Mass.
Fleming, Frank E.	IV Asst. Dyer and Finisher, Goodall Worsted Co., Sanford, Me.
Gahm, George L.	II Superintendent, Wood Worsted Mills, Lawrence, Mass.
Hennigan, Arthur J.	II New England Representative, Talbot Mills, Boston, Mass.
Swan, Guy C.	II Assistant Instructor in Chemistry, Stanford University, Stanford University, Calif.
Varnum, Arthur C.	II Superintendent, Stirling Mills, Lowell, Mass.
Wightman, William H.	IV Salesman, The Bayer Co., Inc., Boston, Mass.
Wood, Herbert C.	I Assistant Superintendent, Union Wadding Co., Pawtucket, R. I.

### Certificate Holders

Church, Charles R.	II-V	Physical Director, Alhambra High School, Alhambra, Calif.
Gillon, Sara A.	IIIb	Designer, Lowell, Mass.
xHildreth, Harold W.	II-V	Section Hand, Arlington Mills, Lawrence, Mass.
Hintze, Thomas F.	I	Resident Engineer, The Texas Co., New York City.
Kent, Clarence L.	III-V	Salesman, Smith Motor Car Co., Lawrence, Mass.
xLane, John W.	I	With Everett Mills, Lawrence, Mass.
xMcDonnell, William H.	I-V	South Boston, Mass.
Newcomb, Guy H.	IV	Mgr. Badische Co., San Francisco, Cal.
Reynolds, Isabel H.	P. G. III-V	See Day, 1903.
Stohn, Alexander C.	III-V	Assistant Superintendent, C. Stohn, Hyde Park, Mass.

Name	Course	Occupation
Woodruff, Charles B.	V	Traveling Salesman, Marshall Field & Co., Birmingham, Ala.

### Evening Course, 1906

#### Certificate Holders

Abbott, Paul W.	Ia	Chief Inspector, Cadillac Motor Car Co., Detroit, Mich.
Amiot, Louis H.	Va	With American Hide and Leather Co., Lowell, Mass.
Armstrong, Elias B.	IIb	With Wellington, Sears & Co., Boston, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
xBrouder, John J.	IIIa	Designer, Ayer Mills, Lawrence, Mass.
Brown, James P.	P. G. IIIa	See Evening, 1905.
Brown, William G.	IIb	President, Geo. C. Moore Wool Scouring Mills and Brookside Worsted Mills, No. Chelmsford, Mass.
Burgess, Joseph H.	Va	Cloth Inspector, Arlington Mills, Law- rence, Mass.
Burnham, Joseph W.	IIIa	Designer, Lincoln Mills, Pascoag, R. I.
xBurnham, Wilmont V.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Dick, Hugo P.	P. G. IIIa	See Evening, 1905.
xDickson, Andrew	IIa	Asst. Shipping Clerk, Coronet Worsted Co., Mapleville, R. I.
*Dimlick, Benjamin C.	P. G. IIIa	
Dodge, Frank	Ia	Overseer, Hamilton Mfg. Co., Lowell, Mass.
Duce, Benjamin	IIIa	Overseer, Weaving, Ayer Mills, Lawrence, Mass.
Ellis, George W.	VII	Superintendent, A. D. Ellis & Sons, Mon- son, Mass.
Eyers, John T.	IV	Buckeye, Texas.
Frank, Emil M.	P. G. IIIa	See Evening, 1904.
xFulton, John M.	V	Lowell Bleachery, Lowell, Mass.
Gregson, Robert B.	Va	Foreman, American Optical Co., South- bridge, Mass.
xHaigh, William	Vb	Boott Mills, Lowell, Mass.
Hartwell, Henry E.	VI	Student, Massachusetts College of Osteo- pathy, Cambridge, Mass.
Hoessler, Carl, Jr.	IIIa	Overseer, Weaving, M. T. Stevens & Son, No. Andover, Mass.
Howard, John	IIa	See Evening, 1900.
xHutton, Harold	V	With N. E. Bunting Co., Lowell, Mass.
xHutton, John M.	Vb	With N. E. Bunting Co., Lowell, Mass.
xInberg, Magnus	Ia	Finland.
Johnson, Ernest A.	V	See Evening, 1902.
Kidd, Thomas E.	IV	Second Hand, Dyehouse, Mayo Woolen Co., Millbury, Mass.
xLaffert, August W.	IIIa	Loomfixer, Wood Worsted Mills, Law- rence, Mass.
xMcCarthy, Joseph F.	IIIa	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
McLaughlin, Peter J.	Ia	Second Hand, Mass. Cotton Mills, Lowell, Mass.

Name	Course	Occupation
McLay, John	Vb	Agent, Valley Worsted Mills, Providence, R. I.
Maguire, James H.	Ia	See Evening, 1905.
Michelmores, Harry	IIIa	Asst. Designer, Brightwood Mfg. Co., No. Andover, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Morton, Albert N.	IIb	Head of Department, Saco-Lowell Shops, Lowell, Mass.
Murphy, Cornelius D.	IIa	Savannah, Ga.
Nelson, Ernest H.	IIIa	See Evening, 1900.
O'Brien, David A.	IV	Pharmacist, Wilson House Drug Co., No. Adams, Mass.
Pedler, William A.	Ia	Superintendent, Cotton Department, Arlington Mills, Lawrence, Mass.
Pihl, Christian E.	VI	Master Mechanic, Appleton Mills, Lowell, Mass.
Pittendreigh, John M.	Ia	Erector, Saco-Lowell Shops, Charlotte, N. C.
Reardon, Timothy H.	VI	Instructor, Industrial School, Lowell, Mass.
Reynolds, Eugene A.	VI	With Lawrence Mfg. Co., Lowell, Mass.
xRichards, Francis G.	IIa	North Andover, Mass.
xRushworth, Walter	VI	Electrician, Girard Bros., Boston, Mass.
Schubert, George J.	V	Second Hand, Pemberton Co., Lawrence, Mass.
Senior, George	Va	Seattle, Wash.
Sharpe, John R.	VI	Overseer, Saco-Lowell Shops, Lowell, Mass.
Sheppard, Byron H.	VI	Architect and Engineer, Providence, R. I.
xSilk, Patrick E.	VII	Second Hand, Finishing, Beaver Brook Mills, Collinsville, Mass.
Skinner, Clarence W.	P. G. IIIa	See Evening, 1905.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
	Va	
Smith, George A.	P. G. IIIa	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
xVogt, Harry A.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
xWalker, William, Jr.	VII	Assistant to Superintendent, Ottaqueche Woolen Co., No. Hartland, Vt.
Ward, James J.	VII	Pressman, Lowell Fertilizer Co., Lowell, Mass.
*Whitcomb, Harry E.	Ia	

## Day Course, 1907

### Diploma Graduates

Arundale, Henry B.	II	See Day, 1905.
Coman, James G.	I	Superintendent and Buyer, Tipton Cotton Mills, Covington, Tenn.
Craig, Albert W.	IV	In Laboratory, Pacific Mills, Lawrence, Mass.
Farmer, Chester J.	IV	Professor of Chemistry, Marquette University, School of Medicine, Milwaukee, Wis.
xHaskell, Spencer H.	II	Worcester, Mass.

Name	Course	Occupation
xHathorn, George W.	IV	Chemist, Lawrence Gas Co., Lawrence, Mass.
Hildreth, Harold W.	II	See Day, 1906.
xHoyt, Charles W. H.	IV	Second Hand, Dyeing, Merrimack Mfg. Co., Lowell, Mass.
Knowland, Daniel P.	IV	Chemist, Geigy-ter-Meer, New York City.
Mackay, Stewart	III	Instructor, Textile Design and Cloth Analysis, Lowell Textile School, Lowell, Mass.
Merriman, Earl C.	II	With Samson Cordage Works, Shirley, Mass.
Raymond, Charles A.	IV	Foreman, N. E. Gas and Coke Company, Everett, Mass.
Storer, Francis E.	II	Clerk, National Shawmut Bank, Boston, Mass.
*Stursberg, Paul W.	II	
Woodcock, Eugene C.	II	Manufacturing Superintendent, Chelsea Fibre Mills, Brooklyn, N. Y.

#### Certificate Holders

xBrannen, Leon V.	III-V	Philadelphia, Pa.
xEhrenfried, Jacob B.	II-V	With George Ehrenfried Co., Lewiston, Me.
Lane, John W.	I-V	See Day, 1906.
Parker, Mrs. Lotta (Meek)	IIIb	Lewiston, Me.

#### Evening Course, 1907

##### Certificate Holders

Ackroyd, Theodore C.	IIb	Arlington Mills, Lawrence, Mass.
xBain, William A.	VII	Color Chemist, C. Bischoff & Co., New York City.
Bake, Herbert	VII	See Evening, 1905.
Ballinger, Frederick W.	IIb	Second Hand, Silesia Worsted Mills, No. Chelmsford, Mass.
xBarber, James E.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
xBarraclough, John C.	Ia	Clerk, Arlington Mills, Lawrence, Mass.
Bastow, Stephen W.	IV	Superintendent, Dyeing and Bleaching, Nashua Mfg. Co., Nashua, N. H.
Bayard, Pierre P.	IIIa	General Manager and Director, Cie Parisienne de Rouse, Puteaux, France.
xBegen, Thomas W.	IIb	Overseer, Washington Mills, Lawrence, Mass.
xBenoit, William A.	Va	Second Hand, Everett Mills, Lawrence, Mass.
xBouille, Arthur L.	Vb	Washington Mills, Lawrence, Mass.
Brannen, Leon V.	IIa	See Day, 1907.
Brouder, John J.	VII	See Evening, 1906.
Bucklitsch, Gustave J.	IIb	Overseer of Combing, Washington Mills, Lawrence, Mass.
Burgess, Joseph H.	Vb	See Evening, 1906.
Butterworth, Charles A.	Va	Assistant Paymaster, Suncook Mills, Suncook, N. H.
xButterworth, John A.	IIb	With J. W. Coggeshall, Providence, R. I.
*Carden, Francis E.	IIb	



Name	Course	Occupation
Carlson, Ernest B.	IIb	West Chelmsford, Mass.
Dick, Hugo P.	IIb	See Evening, 1905.
Dobbs, William	IIb	Second Hand, Mass. Mohair Plush Co., Lowell, Mass.
Dodge, Charles P.	IIa	Machinist, C. S. Dodge, Lowell, Mass.
Duce, Benjamin	VII	See Evening, 1906.
Flint, Leon G.	IIIa	Finished Percher, Washington Mills, Lawrence, Mass.
Frechette, Alphonse J.	IIb	Clerk, W. Gendron, Lawrence, Mass.
xGillespie, James E.	VII	Second Hand, Ayer Mills, Lawrence, Mass.
Gregson, Robert B.	Ia-Vc	See Evening, 1906.
Haartz, John C.	VII	President and Treasurer, W. A. and J. C. Haartz, Boston, Mass.
xHaas, Ignatius	Ia	New York City.
Hamblett, Harry A.	Ia	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hanglin, Albert J.	IV	Foreman, A. J. Gallun & Sons, Milwaukee, Wis.
xHanglin, William E.	Vb	Chicago, Ill.
Hebert, Charles L. J.	IV	In business, Lowell, Mass.
xHitchen, Harry S.	Vb	Lowell, Mass.
xHitchen, Thomas G.	Vb	Manchester, N. H.
Howard, John	VII	See Evening, 1900.
xIgnatius, Pentti	Va	Finland.
xJepson, Harry	Vb	With U. S. Bunting Co., Lowell, Mass.
Kelly, Michael H.	IIIa	See Evening, 1902.
xKirsch, Alfred O.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Laffert, August W.	VII	See Evening, 1906.
Lake, William F.	IIIa	Overseer, Middlesex Co., Lowell, Mass.
Marjerison, T. Sydney	IIIa	Poultry Farmer, Salem, N. H.
xMartin, Willard E.	IIIa	Salesman, W. H. Gardner & Co., Boston, Mass.
Michelmores, Harry	VII	See Evening, 1906.
Myers, James W.	VII	See Evening, 1903.
xNelson, Charles E.	IIb	With Sugden Press Bagging Co., No. Chelmsford, Mass.
O'Brien, Michael F.	IIb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Porter, George K., Jr.	IIIa	Salesman, Wellington, Sears & Co., San Francisco, Calif.
xRead, Paul A.	VII	Superintendent, Barnaby Mfg. Co., Fall River, Mass.
Redman, Henry S.	Ia	See Evening, 1904.
*Ritter, Alfred E.	IIb	
Robbins, John	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Senior, George	Ia-Vc	See Evening, 1906.
Skinner, Clarence W.	VII	See Evening, 1905.
Smith, Arthur	Vc	See Evening, 1905.
Smith, Ernest B.	Vb	East Side Mill & Lumber Co., Selwood, Portland, Oreg.
xSmith, James	Vb	Loom Fixer, Wood Worsted Mills, Lawrence, Mass.
xSmith, Percy H.	Vb	Washington Mills, Lawrence, Mass.
Smith, William E.	VII	See Evening, 1905.



Name	Course	Occupation
Varnum, Arthur C.	Vb	See Day, 1906.
xWahlberg, Einar S.	Ia	Fitchburg, Mass.
xWaterworth, Frank W.	Vb	With Ayer Mill, Lawrence, Mass.
Webb, Francis H.	IIIa	See Evening 1904.
xWebber, John F.	IIIa	Style Man, Converting Dept., Marshall Field & Co., Chicago, Ill.
Whittaker, Thomas B.	IIb	Bookkeeper, Quidnick-Windham Mfg. Co., Providence, R. I.
Wiggin, Leon M.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
xWolf, William C.	Va	Loom Fixer, Pacific Mills, Lawrence, Mass.
xWolger, John J.	IIIa	Loom Fixer, Methuen Co., Methuen, Mass.
xYare, John F.	Vb	Middlesex Co., Lowell, Mass.

### Day Course, 1908

#### Diploma Graduates

Abbott, George R.	II	Andover, Mass.
Ballard, Horace W. C. S.	IV	Chemist and Overseer of Dyeing, Felters Co., Millbury, Mass.
Dwight, John F., Jr.	II	Holliston, Mass.
Farr, Leonard S.	II	Overseer, Farr Alpaca Co., Holyoke, Mass.
Gay, Olin D.	II	Superintendent, Gay Bros. Co., Caven- dish, Vt.
Hadley, Walter E.	IV	Research Chemist, Roessler & Hasslacher Chemical Co., Perth Amboy, N. J.
Huising, Geronimo H.	I	Examiner of Textiles, Bureau of Customs, Manila, P. I.
*Jenckes, Leland A.	VI	
xLewis, LeRoy C.	IV	Statistician, Bigelow-Hartford Carpet Co., Lowell, Mass.
Mailey, Howard T.	II	Assisting Superintendent, Lower Pacific Mills, Lawrence, Mass.
Perkins, Joshua D.	III	Overseer, Worsted Spinning, Amoskeag Mfg. Co., Manchester, N. H.
xPrince, Sylvanus C.	VI	Lowell, Mass.
Proctor, Braman	IV	Dyestuff Salesman, Badische Co., Boston, Mass.
Reynolds, Fred B.	II	Purchasing Agent, M. T. Stevens and Sons Co., No. Andover, Mass.
Robinson, Ernest W.	IV	Chemist, Belding Bros. & Co., and Chem- ist, Rock Mfg. Co., Rockville, Conn.
Weinz, W. Elliot	IV	Chemist, American Felt Co., Boston, Mass.
Wingate, William H.	IV	Chemist, Sidney Blumenthal and Co., Shelton, Conn.

### Evening Course, 1908

#### Certificate Holders

Arnold, Warren H.	VII	Maynard, Mass.
Barrington, James L.	IV	Dyestuff Salesman, Kalle Color and Chemical Co., Boston, Mass.
Begen, Thomas W.	IIb	See Evening, 1907.

Name	Course	Occupation
Berry, Alfred H.	VI	Electrical Engineer, Silesia Worsted Mills, No. Chelmsford, Mass.
Broadbent, James H.	Vb	With U. S. Bunting Co., Lowell, Mass.
xBroadbent, William	Vb	Lawrence, Mass.
Brown, James T.	IIIa	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Buckley, Harry	IV	Overseer, Warp Dyeing, Arlington Mills, Lawrence, Mass.
Campbell, Archibald	IV	In charge of Department, United Drug Laboratories Co., Boston, Mass.
*Carden, Francis E.	IIb	
xCarney, William J.	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
xCarter, Charles R.	Vb	Weaver, Washington Mills, Lawrence, Mass.
xCorr, Eben W.	Vb	With Prudential Life Ins. Co., Lawrence, Mass.
Corr, James F.	Vb	Loomfixer, Bay State Mills, Lowell, Mass.
Craven, Harry	VII	Clerk, Pacific Mills, Lawrence, Mass.
Dick, Hugo P.	Vb	See Evening, 1905.
Dixon, Arthur	IIIa	Loomfixer, American Woolen Co., Methuen, Mass.
Dobbs, William	IIb	See Evening, 1907.
Dunn, George C.	IIIa	Lowell, Mass.
Flynn, William J.	Vb	Lowell, Mass.
Greenhalge, James	Vc	Overseer, Jackson Co., Nashua, N. H.
xHallbauer, William R.	Vb	At Washington Mills, Lawrence, Mass.
Hanson, Edward	IIIa	Overseer, Merrimack Mfg. Co., Lowell, Mass.
xHardman, David B.	IV	Machine Printer, Pacific Mills, Lawrence, Mass.
Harris, Louis	VII	Clothing Designer, J. Peavey and Bros., Boston, Mass.
Hennessey, Ambrose M.	VII	Inspector of Transformers, General Electric Co., Pittsfield, Mass.
Hill, Harold	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
xHoellrich, Martin J.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Ingham, Benjamin W.	Ia	Overseer, Boott Mills, Lowell, Mass.
xLagerbald, Jarl	VII	Finland.
Lake, William F.	P. G. IIIa	See Evening, 1907.
xMcGill, William E.	VII	Second Hand, Linn Woolen Co., Hartland, Me.
*McGovern, James	VII	
McKenna, Jerimiah J.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Maker, Isaac A.	Ia	Draftsman, Lawrence Mfg. Co., Lowell, Mass.
Marjerison, T. Sydney	P. G. IIIa	See Evening, 1907.
xMarshall, Fred K. R.	VI	Electrician, Arlington Mills, Lawrence, Mass.
*Mortenson, Carl W.	IIa	
Nutter, James R.	VI	With Merrimack Mfg. Co., Lowell, Mass.
*Osbeck, William J.	IIIa	

Name	Course	Occupation
xPatterson, Alfred H.	IIIa	Clerk, Lower Pacific Mills, Lawrence, Mass.
xPerkins, Thomas, Jr.	Ia	Superintendent, Chicopee Mfg. Co., Chicopee Falls, Mass.
Picken, William T.	IIIa	Purchasing Agent and Paymaster, Silesia Worsted Mills, No. Chelmsford, Mass.
Plumer, Paul T.	Vb	Cloth Inspector, U. S. Bunting Co., Lowell, Mass.
Porter, George K., Jr.	P. G. IIIa	See Evening, 1907.
Preble, George A.	IIIa	Overseer, Massachusetts Cotton Mills, Lowell, Mass.
Saalfrank, Joseph C.	IIIa	With Arlington Mills, Lawrence, Mass.
Scally, Edward	VI	With D. B. Howe, Worcester, Mass.
Schermerhorn, George E.	Va	See Evening, 1902.
Schuster, William F.	VII	Second Hand, Washington Mills, Lawrence, Mass.
Seddon, N. Graham	IIIa	Manager, Commonwealth Mfg. Co., Brooklyn, N. Y.
Semple, Alexander	IIIa	Lowell, Mass.
Shackleton, J. Henry	IV	Overseer, Dyeing, Pemberton Mills, Lawrence, Mass.
Simoneau, Verner W.	VI	Student, Baltimore Medical College, Baltimore, Md.
xSpurr, Albert R.	VII	Finisher, Atlantic Mills, Providence, R. I.
Spurr, James H., Jr.	IV	Biologist, State Board of Health Experimental Station, Lawrence, Mass.
xStewart, Charles	Va	Weaver, Tremont and Suffolk Mills, Lowell, Mass.
Teichmann, Alfred A.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Tucker, John T.	Ia	Clerk, Saco-Lowell Shops, Lowell, Mass.
Varnum, Arthur C.	P. G. IIIa	See Day, 1906.
Webber, John F.	P. G. IIIa	See Evening, 1907.
Whittaker, Thomas B.	IIb	See Evening, 1907.
Wiggin, Leon M.	P. G. IIIa	See Evening, 1907.
xWillgeroth, Henry J.	IIIa	Asst. Designer, Wood Worsted Mills, Lawrence, Mass.
Wilmot, Joseph	IIIa	Instructor, Weaving Dept., Lowell Textile School, Lowell, Mass.
Wolf, William C.	Vb	See Evening, 1907.
Wood, Jonathan	Va	See Evening, 1902.
xYoung, Richard, Jr.	Va	Loomfixer, Tremont and Suffolk Mills, Lowell, Mass.

### Day Course, 1909

	Diploma	Graduates
Brainerd, Arthur T.	IV	Salesman, Farbwerke Hoechat Co., Chicago, Ill.
Conant, Harold W.	I	With Conant, Houghton & Co., Littleton, Mass.
Fairbanks, Almonte H.	II	Treasurer, Middlesex Knitting Co., Reading, Mass.
Ferguson, William G.	III	Yarn Inspector, Ludlow Mfg. Associates, Ludlow, Mass.

Name	Course	Occupation
Fiske, Starr H.	II	With D. Goff & Son, Pawtucket, R. I.
Gyzander, Arne K.	IV	Chemist, Cassella Color Co., Boston, Mass.
Holden, Francis C.	IV	Chemist and Dyer, Chelsea Fibre Mills, Brooklyn, N. Y.
Kay, Harry P.	II	Foreman of Finishing, T. H. Taylor Co., Ltd., Chatham, Ont., Canada.
Laughlin, James K.	III	Providence, R. I.
Levi, Alfred S.	IV	Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
Mason, Archibald L.	VI	Billerica, Mass.
Mullen, Arthur T.	II	Designer, Sutton's Mills, No. Andover, Mass.
Newall, J. Douglas	IV	In Charge of Dyeing and Soaping, Passaic Print Works, Passaic, N. J.
Parkis, William L.	I	Efficiency Man, Cheney Bros., So. Manchester, Conn.
Pease, Chester C.	I	Superintendent, Yarn Mill, Shaw Stocking Co., Lowell, Mass.
Potter, Carl H.	I	Efficiency Engineer, Amoskeag Mfg. Co., Manchester, N. H.
Prescott, Walker F.	IV	Efficiency Investigator, Champion International Paper Co., East Pepperell, Mass.
Saunders, Harold F.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Stone, Ira A.	IV	Buyer, Royal Waste Co., Boston, Mass.
Wood, J. Carleton	IV	Textile Expert, Republic Rubber Co., Youngstown, Ohio.

### Evening Course, 1909

Certificate Holders		
xAnderson, Carl A.	IV	Machinist, Lenot Motor Co., Boston, Mass.
Arnold, Warren H.	IIIa	See Evening, 1908.
xBailey, Rothwell	Va	With Mass. Cotton Mills, Lowell, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Banks, Jonas	Va	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Barr, Mrs. John E. (Butler, Elizabeth M.)	IIIb	Lowell, Mass.
Benoit, Benjamin L.	VIb	Bookkeeper, Bay State Mills, Lowell, Mass.
xBooth, Arthur	IIIa	Clerk, Arlington Mills, Lawrence, Mass.
Bowen, Herbert E.	IIIa	With Ipswich Mills, Lowell, Mass.
Buckley, Richard A.	Vb	With U. S. Bunting Co., Lowell, Mass.
Bunce, Raymond H.	Vb	Salesman, American Woolen Co., Brooklyn, N. Y.
Carman, William	Va	Fixer, Tremont and Suffolk Mills, Lowell, Mass.
xChesworth, Frank K.	Va	With Everett Mills, Lawrence, Mass.
Cockell, Frederick H.	IIIa	Poultryman, J. Lord, No. Andover, Mass.
Cowdrey, Charles E.	Vb	See Evening, 1902.
xDavison, Frank L.	Vb	With Talbot Mills, No. Billerica, Mass.
Dulligan, Charles E.	VIa	Overseer, U. S. Cartridge Co., Lowell, Mass.



Name	Course	Occupation
xDunning, Carlos W.	VIb	Second Hand, Appleton Co., Lowell, Mass.
Gaunt, Ernest H.	IIIa	Writer and Mercantile Statistician, Babson's Statistical Organization, Wellesley Hills, Mass.
Gilinson, Philip J.	VIa	Experimental Work, Heinze Electric Co., Lowell, Mass.
Gordon, Herbert E.	IIIa	Clerk, Arlington Mills, Lawrence, Mass.
Hanson, Edward	P. G. IIIa	See Evening, 1908.
xHayes, Michael C.	IIa	In business, No. Billerica, Mass.
Hill, Harold	Va	See Evening, 1908.
Hillier, Arthur P.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Hodgkins, Albert A.	VII	Overseer and Designer, A. & E. H. Henkels, Bridgeport, Conn.
xHolt, Harry C.	VIa	Electrician, Mass. Cotton Mills, Lowell, Mass.
xHouston, William I.	IIIa	Weaver, Washington Mills, Lawrence, Mass.
xHowell, Edward A.	Va	Loomfixer, Pemberton Mills, Lawrence, Mass.
xJoyce, John	Vc	Weaver, Merrimack Mfg. Company, Lowell, Mass.
xKaler, Harold F.	VIb	In Assembling Dept., General Electric Co., Lynn, Mass.
Kelley, Bernard J., Jr.	VIc	With B. Joseph Kelley, New York City.
Kershaw, Benn	Va	Overseer, Boott Mills, Lowell, Mass.
Lincourt, Henry E.	VIb	With Stover & Bean, Lowell, Mass.
McClure, Charles G.	VIb	With Heinze Electric Co., Lowell, Mass.
McLay, John	IIb	See Evening, 1906.
Madden, Peter	Va	In Business, Lowell, Mass.
Mahoney, Dennis J.	Vb	Assistant Postmaster, No. Billerica, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Musard, Albert E., Jr.	Vc	Bridgeport, Conn.
Nelson, Ernest H.	Ia	See Evening, 1900.
Orrell, Frank L.	VIb	Second Hand, Mass. Mohair Plush Co., Lowell, Mass.
Palmer, G. Buel	Vb	See Evening, 1903.
Paquin, Joseph	VIa	Machinist, U. S. Government, Schofield Barracks, N. H.
xParsons, Joseph G.	IIIa	Pattern Weaver, Thos. Kitson & Son, Stroudsburg, Pa.
xPearson, Fred	VIa	Machinist, Saco-Lowell Shops, Lowell, Mass.
Read, Paul A.	Va	See Evening, 1907.
xRobinson, Thomas	Ia	Foreman, Boott Cotton Mills, Lowell, Mass.
xRyan, Edward P.	Ia	Lowell, Mass.
Schubert, George J.	IIIa	See Evening, 1906.
xSchuerfeld, Harry W.	IIIa	Salesman, C. U. Thomas and Co., Boston, Mass.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
Smith, George A.	VII	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stocks, Carl W.	VIa	Statistician, American Electric Railway Assn., New York City.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.



Name	Course	Occupation
*Sullivan, Humphrey F.	Ia	
Sykes, Alvin E.	VIa	Shipping Clerk, Saco-Lowell Shops, Lowell, Mass.
Tucker, John T.	Va	See Evening, 1908.
Varnum, Arthur C.	VII	See Day, 1906.
Vogt, Alfred H.	IIb	See Evening, 1902.
xWalsh, Michael L.	Ia	Section Hand, Appleton Co., Lowell, Mass.
Ware, Edward W.	IIIa	With Wellington, Sears & Co., Boston, Mass.
xWatson, Luther F.	IIb	Clerk, Arlington Mills, Lawrence, Mass.
xWeigel, Frederick A.	VIIb	Machinist, Pacific Mills, Lawrence, Mass.
Young, Richard, Jr.	Vc	See Evening, 1908.

### Day Course, 1910

#### Diploma Graduates

xArienti, Peter J.	IV	Chemist, Wanskuck Co., Providence, R. I.
Cary, Julian C.	VI	With American Mutual Liability Ins. Co., Boston, Mass.
Clark, Thomas T.	II	Treasurer, Talbot Mills, No. Billerica, Mass.
Duval, Joseph E.	II	Dorchester, Mass.
xFinlay, Harry F.	IV	Color Chemist, American Dyewood Co., New York City.
Fletcher, Roland H.	VI	Littleton Common, Mass.
Gale, Harry L.	III	Manager, Fancy Goods Dept., Wilmerding & Bissett, New York City.
Goldberg, George	VI	Draftsman, B. F. Sturtevant Co., Hyde Park, Mass.
xHardy, Philip L.	VI	Construction Work, L. E. Locke, South Lawrence, Mass.
Howe, Woodbury K.	I	With International Cotton Mills, Manchester, N. H.
xHurtado, Leopoldo, Jr.	VI	General Manager, Hurtado and Co., Uruapan, Mich., Mexico.
Jelleme, William O.	I	Head of Test Department, Brighton Mills, Passaic, N. J.
Keough, Wesley L.	II	Paymaster, Massachusetts Mohair Plush Co., Lowell, Mass.
Lamb, Arthur F.	II	Manager, Rockland Cleaning & Dyeing Co., Rockland, Me.
McCool, Frank L.	IV	Color Chemist, Cassella Color Co., Boston, Mass.
Manning, Frederick D.	IV	Investigator, Cheney Bros., So. Manchester, Conn.
xMurray, James A.	II	With Talbot Clothing Co., Boston, Mass.
Nichols, Raymond E.	VI	Lowell Bleachery, Lowell, Mass.
Putnam, Leverett N.	IV	Dyer, Franklin Mills, Franklin, Mass.
Reed, Norman B.	I	Textile Cost Accountant and Industrial Engineer, Boott Mills, Lowell, Mass.
xRobson, Frederick W. C.	IV	Dyer, Hamilton Cotton Co., Hamilton, Ont.
Smith, Doane W.	II	Efficiency Dept., Ludlow Manufacturing Associates, Ludlow, Mass.

Name	Course	Occupation
Smith, Theophilus G., Jr.	IV	Groton, Mass.
Stronach, Irving N.	IV	Dyer, Aberfoyle Mfg. Co., Chester, Pa.
Whitcomb, Roscoe M.	IV	Manager, Hinsdale Drug Co., Hinsdale, Mass.

### Evening Course, 1910

#### Certificate Holders

Anderton, Harry	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
xAtkinson, Norman	Vb	Lawrence, Mass.
Bailey, Carl E.	Ia	Assistant Superintendent, Stark Mills, Manchester, N. H.
Banks, Jonas	Vc	See Evening, 1909.
Berry, Percy W.	Vb	Treasurer, Walbuck Crayon Co., Lawrence, Mass.
xBourchard, Ethan J.	Vc	Loomfixer, Merrimack Mfg. Co., Lowell, Mass.
xBourchard, Robert R.	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Burgess, Joseph H.	IIIa	See Evening, 1906.
Campbell, Edward G.	Vic	In Real Estate Business, Lowell, Mass.
Christison, Hugh	IV	Chemist's Assistant, Arlington Mills, Lawrence, Mass.
Cox, Edward J.	IIIa	Cost Finder, Merrimack Mfg. Co., Lowell, Mass.
Cutress, Albert J.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
xDeely, John A.	Vb	Pittsfield, Mass.
xDuckett, Fred I.	Vb	Section Hand, Washington Mills, Lawrence, Mass.
Dulligan, Lawrence F.	VIa	Machinist, Vulcan Iron Works, Seattle, Wash.
Dunn, George C.	IVa	See Evening, 1908.
xEklund, Louis V.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Fielding, Fred	Vc	With Merrimack Mfg. Co., Lowell, Mass.
Flemings, Lester A.	Va	Paymaster, Bay State Mills, Lowell, Mass.
Flynn, John	VId	Toolmaker, Kitson Plant, Saco-Lowell Shops, Lowell, Mass.
*Flynn, Patrick	Vb	
xFujiyoshi, Heisayu	Ia	Student, Graduate School of Business Administration, Harvard College, Cambridge, Mass.
Gaspar, Edith E.	IIIb	Clerk, Lawrence Hosiery, Lowell, Mass.
Gauthier, William	Vb	With U. S. Bunting Co., Lowell, Mass.
Gookin, Alice L.	IIIb	Teacher, City of Lowell, Lowell, Mass.
xHering, Paul C.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Hibbert, George E.	Va	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
xHill, Ellsworth O. C.	IIb	Assistant Superintendent, Yarn Dept., Wood Worsted Mills, Lawrence, Mass.
Hilliard, William B.	VIa	Foreman, American Watch Tool Co., Waltham, Mass.

Name	Course	Occupation
Hird, Arthur W.	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.
Hird, James A.	IVa	Chemist, B. & M. and N. Y., N. H. & H. R. R., Boston, Mass.
Hodgkins, Albert A.	IIIa	See Evening, 1909.
Hoellrich, Martin J.	Vc	See Evening, 1908.
Holt, Gavin O.	IVa	Lorraine Mfg. Co., Pawtucket, R. I.
Houston, William I.	Vb	See Evening, 1909.
Hunton, John H.	VII	Treasurer, Newichawanick Co., So. Berwick, Me.
Hurtado, Leopoldo, Jr.	Vc	See Day, 1910.
Hutton, Thomas V.	Vb	Fireman, Fore River Shipbuilding Co., Quincy, Mass.
Jackson, Frank	VIb	With Copper Queen Consolidated Mining Co., Bisbee, Ariz.
Jean, Adhemard C.	VIa	Inspector, Line Dept., Bay State Street Railway Co., Lowell, Mass.
Jordan, Frederic W.	IV	Draftsman, Smith and Brooks, Lowell, Mass.
xJorde, Linville T.	VIc	Cable Splicing, N. E. Tel. & Tel. Co., Dover, N. H.
Kershaw, Benn	Vc	See Evening, 1909.
Kershaw, Samuel S.	IIB	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
xKrause, George	VII	Assistant Finisher, Arlington Mills, Lawrence, Mass.
LaJeunesse, Joseph A.	IVa	With Gingras & Corbett, Montreal, Canada.
Leck, Arthur J.	VII	Analyzer of Fabrics, Earl & Wilson, Troy, N. Y., and Instructor of Textile Fabrics, The Troy Central School, Troy, N. Y.
Ledoux, Blanche H.	IIIb	With Shadduck & Normandin Co., Lowell, Mass.
xLemire, Arthur	Ia	Overseer, Renfrew Mfg. Co., Adams Mass.
McAuliffe, Patrick D.	VIb	In Business, Lowell, Mass.
McElroy, Samuel H.	Vb	With Heinze Electric Co., Lowell, Mass.
xMabbett, Albert L.	IIIa	Assistant Superintendent and Designer, Newport Woolen Co., Newport, Me.
Maxcy, Leo M.	VIc	Foreman, F. E. Jewett and Co., Lowell, Mass.
xMessiah, Hiram G.	Vb	With G. A. Rogers Bakery, Reading, Mass.
Nelson, Ernest H.	Vc	See Evening, 1900.
Nelson, Gustave A.	Vb	With T. Martin and Bro., Lowell, Mass.
Nichols, Clarence W.	Vb	With Alfred Kimball Shoe Co., Lawrence, Mass.
Nicoll, John	IVa	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Paquin, Joseph	VIb	See Evening, 1909.
Petterson, Birger	VIa	Master Mechanic, Lowell Bleachery, Lowell, Mass.
Phelps, Mary I.	IIIb	Teacher, City of Lowell, Lowell, Mass.
Redman, Henry S.	IV	See Evening, 1904.
Robinson, Thomas	Vc	See Evening, 1909.
Root, Francis X., Jr.	IIIa	Loomfixer, Hamilton Co., Lowell, Mass.
Shackleton, John H.	Ia	See Evening, 1908.

Name	Course	Occupation
Stewart, William W.	IV	Overseer of Dyeing, Barnaby Mfg. Co., Fall River, Mass.
Stopherd, William H.	VII	See Evening, 1899.
xStott, Bertram S.	Vb	Loomfixer, Geo. E. Kunhardt, Lawrence, Mass.
xStott, Samuel	IV	Dyer, Arlington Mills, Lawrence, Mass.
xSullivan, Michael F.	Vib	With Merrimack Woolen Co., Dracut, Mass.
Todd, Henry	VII	With Lawrence Gas Co., Lawrence, Mass.
Welch, Benjamin L.	Vib	Installer, N. E. Tel. & Tel. Co., Central Office, Lowell, Mass.
Whitman, William P.	IVa	Second Hand, Farwell Bleachery, Lawrence, Mass.
Whitney, Frederick A.	IV	Dyer, John P. Boyd Co., Williamstown, Mass.
Williams, Allen R.	Ia	Clerk, Amoskeag Mfg. Co., New York City.
Worthington, John A.	Ia	Manager of Warehouse, Vacuum Oil Co., Burlington, Vt.

### Day Course, 1911

#### Diploma Graduates

Adams, Tracy A.	IV	Second Hand in Dyehouse, Pacific Mills, Lawrence, Mass.
Bailey, Walter J.	IV	Manager, Bailey's Cleansers and Dyers, Watertown, Mass.
Blaikie, Howard M.	II	Assistant to Styler and Salesman, American Woolen Co., New York City.
Cameron, Elliott F.	IV	With New England Casualty Co., Boston, Mass.
Chandler, Proctor R.	IV	Chemist, Loose-Wiles Biscuit Co., New York City.
Chisholm, Lester B.	I	Efficiency Manager, T. Martin & Bro. Mfg. Co., Chelsea, Mass.
Dewey, Maurice W.	II	Of Peck Brothers Co., Montpelier, Vt.
Flynn, Thomas P.	IV	Assistant Dyer, Middlesex Bleach, Dye & Print Works, Somerville, Mass.
Ford, Edgar R.	IV	Chemist, Saylesville Bleachery, Saylesville, R. I.
Gainey, Francis W.	IV	Second Hand, Dyehouse, Pacific Mills, Lawrence, Mass.
Hay, Ernest C.	II	With Monomac Spinning Co., Lawrence, Mass.
Hendrickson, Walter A.	II	Superintendent and Secretary, Middlesex Knitting Co., Reading, Mass.
Hubbard, Ralph K.	IV	Manager, Squam Lake Woolen Co., Ashland, N. H.
Hunton, John H.	II	See Evening, 1910.
Martin, Harry W.	IV	Chemist, Hood Rubber Co., Watertown, Mass.
Merrill, Allan B.	IV	Chemist, B. F. Goodrich Co., Akron, Ohio.
Moore, Karl R.	IV	Chemist, Atlantic Mills, Providence, R. I.
O'Connell, Clarence E.	IV	Second Hand in Dyehouse, Boston Mfg. Co., Waltham, Mass.



Name	Course	Occupation
Pearson, Alfred H.	IV	Section Hand, Dyehouse, Goodall Worsted Co., Sanford, Me.
Rich, Everett B.	III	Hotel Manager, Profile and Flume Hotels Co., Profile House, N. H.
Sidebottom, Leon W.	IV	Second Hand, Dyehouse, Appleton Co., Lowell, Mass.
Standish, John C.	IV	Chemist and Dyer, F. C. Huyck and Sons, Albany, N. Y.
Toshach, Reginald A.	II	Asst. Designer, M. T. Stevens and Sons Co., Haverhill, Mass.
Walker, Alfred S.	II	With Essex Mills, Picton, N. J.
Watson, William	III	With F. E. Watson, Haverhill, Mass.
Wood, Ernest H.	IV	Assistant Instructor, Department of Biological Chemistry, Marquette University School of Medicine, Milwaukee, Wis.

### Evening Course, 1911

#### Certificate Holders

Andrews, Oliver	Ia-Va	Salesman, Wellington, Sears & Co., New York City.
Ballinger, William E.	I Ib	Section Hand, Wood Worsted Mills, Lawrence, Mass.
x Barnes, Joseph	Ia	Second Hand, Smith and Dove Mfg. Co., Andover, Mass.
x Bastow, Percy	IVa	Warp Mercerizer, Arlington Mills, Lawrence, Mass.
Birkby, Charles H.	IVa	Overseer of Dyeing, J. & J. Dobson, Philadelphia, Pa.
Brown, William F.	V Ib	Master Mechanic, U. S. Worsted Co., Lowell, Mass.
Burke, James F.	Vc	With Bigelow-Hartford Carpet Co., Lowell, Mass.
x Carpilio, John A.	VIa	With Alfred Kimball Shoe Co., So. Lawrence, Mass.
Carty, Thomas P.	Vb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Christison, Hugh	IVd	See Evening, 1910.
Cochrane, John	VIb	Electrician, Lowell Gas Light Co., Lowell, Mass.
Cote, George W.	VIb	With Shaw Stocking Co., Lowell, Mass.
Cox, Edward J.	Va	See Evening, 1910.
Dean, Hubert R.	VIb	Draftsman, Arlington Mills, Lawrence, Mass.
Delaney, Michael J.	Vb	Lowell, Mass.
x Dodge, Ernest W.	Vb	Lowell, Mass.
Downs, John F.	VI d	With Heinze Electric Co., Lowell, Mass.
Dulligan, Thomas	VIa	With U. S. Cartridge Co., Lowell, Mass.
x Flaherty, William	Vb	With Faulkner's Mill, No. Billerica, Mass.
Fournier, Albert A.	Ia	Overseer, Renfrew Mfg. Co., Adams, Mass.
Fujiyoshi, Heisayu	Va	See Evening, 1910.
Gakidis, Alexander N.	IVa	Proprietor, The Arsculapius Pharmacy, Manchester, N. H.



Name	Course	Occupation
Garrity, Joseph F.	VIId	Machinist, Tremont & Suffolk Mills, Lowell, Mass.
Glennon, Edward M.	IVa	Assistant Dyer, Dana Warp Mills, Westbrook, Me.
Goodwin, Ross	Vb	With Heinze Electric Co., Lowell, Mass.
Gustafson, Alfred L.	IVa	With J. J. Mullaney, Lowell, Mass.
xHandley, John M.	Vb	With Musketaquid Mills, Lowell, Mass.
xHanslip, Charles W.	Vb	Saugus, Mass.
xHartwell, Marcus H.	Ia - Va	Cost Clerk, Warren Cotton Mills, West Warren, Mass.
*Heaton, Forster G.	IV	
Herrick, William E.	VII	Overseer, Albany Felt Co., Albany, N. Y.
Hibbert, George E.	Vc	See Evening, 1910.
Hodge, William	VIa	Chief Clerk, Farwell Bleachery, Lawrence, Mass.
Kennedy, William E.	VIa	Lawrence, Mass.
Lachance, Melina	IIIb	With A. G. Pollard Co., Lowell, Mass.
Lemire, Arthur	Va	See Evening, 1910.
Linberg, Joseph F.	IVa	Dyer, Linberg & Co., Inc., Jamestown, N. Y.
xLogan, George H. S.	IV	Dyer, Lewando's Dyeing Co., Watertown, Mass.
McNamara, Thomas	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Manning, James B.	IVa	Dyer, Felters Co., Millbury, Mass.
xMarsden, Phillips B.	IVa	Assistant Chemist, Arlington Mills, Lawrence, Mass.
Milot, Joseph E.	VIc	With Amasa Pratt Co., Lowell, Mass.
Murphy, Howard H.	IIb	In business, Boston, Mass.
xNelson, James A.	Ia	Clerk, R. P. Webster, Lowell, Mass.
xNelson, Sigfred W.	VIId	With Saco-Lowell Shops, Lowell, Mass.
xNewall, Preston	Ia	Overseer, Kosciusko Cotton Mill, Kosciusko, Miss.
xNewsholme, Charles E.	VIb	Student, Wentworth Institute, Boston, Mass.
Nichol, Samuel J.	IVa	Dyer, Waterhead Mills, Lowell, Mass.
Nichols, Nathan A.	VIb	Draftsman, The Lamson Co., Lowell, Mass.
Parkin, Prescott R.	Vb	Stock Clerk, General Electric Co., East Boston, Mass.
Pedler, William A.	IVa	See Evening, 1906.
xPerron, Francis J.	Vb	With Brightwood Mfg. Co., No. Andover, Mass.
Perry, Clarence R.	IIb	Assistant Superintendent, Worsted Dept., Washington Mills, Lawrence, Mass.
Racicot, Marie E.	IIIb	Student, Lowell Textile School, Lowell, Mass.
xRobinson, James E.	VII	Finisher, Adams Mfg. Co., Shelton, Conn.
Robinson, Ruddach P.	VII	Paymaster, Beaver Brook Mills, Collinsville, Mass.
Rogers, John F.	Ia	Lowell, Mass.
Rowlands, Harold	Va	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Shaffer, William A.	VIId	Machinist, W. W. Carey, Lowell, Mass.
Shields, John J.	Va	With Appleton Co., Lowell, Mass.
Stanley, John R.	IIb	Section Hand, Star Worsted Co., Fitchburg, Mass.
Stearns, Orlo F.	IVa	With Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

Name	Course	Occupation
Stewart, George	Ia-IVa	Overseer of Dyeing, Massachusetts Cotton Mills, Lowell, Mass.
Tennant, Joseph A.	VIb	Machinist, Pacific Mills, Lawrence, Mass.
xWade, Frank J.	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Walton, Frank L.	Ia	Manager, Tupelo Cotton Mills, Tupelo, Miss.
Ward, Bernard D.	IIIa	Pattern Weaver, U. S. Bunting Co., Lowell, Mass.
Williams, Allen R.	Va	See Evening, 1910.
Willmott, Herbert J.	VIa	Draftsman, Locks and Canals, Lowell, Mass.
xWollin, Frederick W.	Va	Utica, N. Y.
xWright, Frederick J.	Vb	With Massachusetts Mohair Plush Co., Lowell, Mass.

### Day Course, 1912

#### Diploma Graduates

Bigelow, Prescott F.	II	Investigator, Cheney Bros., So. Manchester, Conn.
Brown, Rollins	IV	With York Mfg. Co., Saco, Me.
Coan, Charles B.	IV	Overseer of Dyeing, Renfrew Mfg. Co., Adams, Mass.
Conant, Richard G.	I	Salesman, Brighton Mills, Passaic, N. J.
Dalton, Gregory S.	IV	Chemist, Federal Rubber Co., Cudahy, Wis.
Dearth, Elmer E.	IV	Examiner of Textiles, Federal Rubber Co., Cudahy, Wis.
Elliot, Gordon B.	II	With Cheney Bros., So. Manchester, Conn.
Engstrom, Karl E.	VI	Student, Massachusetts Institute of Technology, Boston, Mass.
Frost, Harold B.	II	With Ayer Mills, Lawrence, Mass.
Hassett, Paul J.	IV	Chemist, Remington Typewriter Co., Bridgeport, Conn.
Holmes, Otis M.	VI	Manager of Stock Room, Gardner Gas Co., Gardner, Mass.
Hood, Leslie N.	IV	Assistant Chemist, Sayles Finishing Co., Saylesville, R. I.
Lamont, Robert L.	II	With Cheney Bros., So. Manchester, Conn.
Leitch, Harold W.	IV	Chemist, The Brightwood Mfg. Co., No. Andover, Mass.
Munroe, Sydney P.	I	Assistant Superintendent, Merchants Mfg. Co., Fall River, Mass.
Niven, Robert S.	VI	Draftsman, Crosby Steam Gage and Valve Co., Charlestown, Mass.
Pottinger, James G.	II	With S. Slater and Sons, Inc., New York City.
Roche, Raymond V.	IV	Assistant Dyer and Bleacher, Renfrew Mfg. Co., Adams, Mass.
Rundlett, Arnold D.	VI	With Ayer Mills, Lawrence, Mass.
Shea, Francis J.	II	Ware, Mass.
Sullivan, John D.	VI	With Haverhill Box Board Co., Bradford, Mass.

Name	Course	Occupation
Thaxter, Joseph B., Jr.	II	Salesman, Smith and Dove Mfg. Co., Andover, Mass.
Whitehill, Warren H.	IV	Instructor in Chemistry, Lowell Textile School, Lowell, Mass.
Yavner, Harry	II	Foreman, Scouring Dept., S. A. Maxwell Co., Bangor, Me.

### Evening Course, 1912

#### Certificate Holders

Beech, Wilfred	Ia	Machinist, Pratt & Whitney Co., Hartford, Conn.
Bernard, Joseph E.	VId	Machinist, Upton & Gilman, Lowell, Mass.
Blais, Emile	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Blanchette, Eugene	IIIb	With Merrimack Mfg. Co., Lowell, Mass.
Boije, Walter F.	I Ib-VII	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Brainerd, Albert C.	Ia	Second Hand, Everett Mills, Lawrence, Mass.
Brainerd, Harry C.	Ia	Second Hand, Lower Pacific Mills, Lawrence, Mass.
xBramley, Charles	Va	With Everett Mills, Lawrence, Mass.
xBroderick, Thomas H.	VII	Material Clerk, Lawrence Dyeworks Co., Lawrence, Mass.
Browne, Charles D.	Ia	Sherman Mfg. Co., Sherman, Texas.
xBurke, George J.	VII	With Merrimack Woolen Co., Dracut, Mass.
Buzzell, Fred S.	IIIa	Second Hand, Arlington Mills, Lawrence, Mass.
Carlson, Goddard O.	VII	Overseer, Stirling Mills, Lowell, Mass.
xChristenson, John O.	V Ib	Student, Lowell, Mass.
Clark, John W.	IVa	Assistant Dyer, Puritan Mills, Plymouth, Mass.
Daskalakis, Efthimios Z.	Vb	With Boott Mills, Lowell, Mass.
Dick, Henry K.	Ia	Instructor in Knitting, Lowell Textile School, Lowell, Mass.
Dittman, Ralph A.	IIIa	Assistant Superintendent, The Glazier Mfg. Co., So. Glastonbury, Conn.
Dollbaum, John A.	IIIa	Manager, E. T. Dollbaum, Stonington, Conn.
xDonahey, William H.	Vb	Chain Builder, U. S. Bunting Co., Lowell, Mass.
Dulligan, Charles E.	IVa	See Evening, 1909.
Egan, Charles H.	IVa	Oil Analyst, A. D. Little, Inc., Boston, Mass.
Freeman, Ralph W.	IVa	Lowell, Mass.
xFrothingham, Newton S.	Ia	With Merrimack Mfg. Co., Lowell, Mass.
Graves, John F.	V Ib	Draftsman, Smith and Brooks, Lowell, Mass.
Greenwood, Ralph F.	VII	Superintendent, Richardson & Foster Co., Central Falls, R. I.
Hansen, Hans M.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Hartshorn, George T.	VII	With American Felt Co., Dolgeville, N. Y.

Name	Course	Occupation
Hibbert, George E.	Vb	See Evening, 1910.
Higginson, Joseph H.	IIIa	Assistant Superintendent, Pentucket Mills, Haverhill, Mass.
Holland, Walter F.	IIIa	Loomfixer, Washington Mills, Lawrence, Mass.
Hutchings, James C.	VII	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Jackson, Frank	VId	See Evening, 1910.
Jasper, Grant	Vc	With Bigelow Carpet Co., Lowell, Mass.
*Kent, Arthur	V Ib	
Kerrigan, Arthur J.	VIa	Clerk, Saco-Lowell Shops, Lowell, Mass.
Lambert, Harry	I Ib	Overseer, Bigelow-Hartford Carpet Co., Lowell, Mass.
Lapierre, Alderic S.	IIIa	Second Hand, Merrimack Mfg. Co., Lowell, Mass.
LaPorte, Philip J.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.
Leith, Joseph E.	Vb	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Lockberg, John L.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Lowe, John C.	I Ib	Instructor, Woolen Yarns, Lowell Textile School, Lowell, Mass.
xMcCann, Martin	Vb	With Merrimack Woolen Co., Dracut, Mass.
Macdonald, Chester W.	VIa	Instructor, Lowell Industrial School, Lowell, Mass.
Michael, Joseph C.	Vb	With George F. White, Lowell, Mass.
xMuldoon, Joseph M.	V Ib	Brooklyn, N. Y.
*Naylor, Charles	IVa	
Orrell, Frank L.	I Ib	See Evening, 1909.
Palm, Carl H.	VIa	Machine Tool Designer, Metz Automobile Co., Waltham, Mass.
xPihl, Ingrid I.	IIIb	Stenographer, Victor Pihl, Lowell, Mass.
Preble, George A.	Va	See Evening, 1908.
Prescott, William B.	Va	With A. H. Chase & Co., Boston, Mass.
Redman, Henry S.	VIa	See Evening, 1904.
xRiley, Edward T.	IIIa	No. Billerica, Mass.
Rollins, Henry E.	VII	Dyer, Richardson, Foster Co., Central Falls, R. I.
Royds, James	Ia	Overseer, Boott Mills, Lowell, Mass.
Savage, Charles F.	IVa	In business, Savage Bros., Lowell, Mass.
Shearer, David D.	VII	With Lawrence Dye Works Co., Lawrence, Mass.
Skidmore, Russell P.	V Ib	Draftsman, Lamson Store Service Co., Lowell, Mass.
Smith, William F.	VId	Machinist, Bigelow-Hartford Carpet Co., Lowell, Mass.
xStevens, Harold S.	IIIa	Of Stevens Shoe Co., Haverhill, Mass.
Stevenson, Robert P.	Ia	Salesman, Wm. V. Threlfall, Boston, Mass.
Sugden, Albert G.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Swanson, Victor E.	IVa	Carbonizer, Stirling Mills, Lowell, Mass.
Taylor, Harold S.	V Ib	Clerk, Wing's Market, Lowell, Mass.
Towers, Frederic G.	Ia	Section Hand, Pacific Mills, Lawrence, Mass.



Name	Course	Occupation
Turgeon, Roderick	IVa	Clerk, Talbot Dyewood and Chemical Co., Lowell, Mass.
xVause, John	Va	With Pacific Mills, Lawrence, Mass.
Ward, Herbert H.	Vb	Gilbertville, Mass.
Webster, Orrin H.	Ia	Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.
xWicks, Frederic M.	IIIa	Second Hand, Pentucket Mills, Haverhill, Mass.
Wilkinson, Joseph	IIIa	Loomfixer, U. S. Bunting Co., Lowell, Mass.
Wood, Arthur S.	Va	Second Hand, Granby Elastic Web Co., Granby, P. Q.

### Day Course, 1913

#### Degree Graduates

Holmes, Otis M.	VI	See Day, 1912.
Pensel, George R.	IV	Assistant Chemist, S. Slater and Sons, Inc., Webster, Mass.

#### Diploma Graduates

Bennett, Herbert B.	II	With Catlin and Co., New York City.
Cleary, Charles J.	II	Laboratory Assistant in Textiles, Bureau of Standards, Washington, D. C.
Cook, Kenneth B.	I	Designer, American Mills Co., Waterbury, Conn.
Davieau, Arthur N.	VI	With American Felt Co., Hyde Park, Mass.
Davis, Alexander D.	VI	Instructor, Textile School, South Manchester, Conn.
Dearborn, Roy	VI	Assistant Engineer, Abbot Academy, Andover, Mass.
Gadsby, Arthur N.	II	Laboratory Assistant, Bureau of Standards, Washington, D. C.
Horton, Chester T.	VI	Wilmington, Mass.
Johnson, Arthur K.	IV	With Pacific Mills, Lawrence, Mass.
Mather, Harold T.	VI	Safety Inspector, Aetna Life Insurance Co., Hartford, Conn.
Murray, James	IV	Chemist, Nashua Gummed and Coated Paper Co., Nashua, N. H.
Peck, Carroll W.	IV	Travelling Salesman, Brewer and Co., Worcester, Mass.
Pillsbury, Ray C.	I	Efficiency Engineer, Amoskeag Mfg. Co., Manchester, N. H.
Plummer, Elliott B.	IV	Chemist, Glenlyon Dye Works, Phillipsdale, R. I.
Putnam, Philip C.	IV	With Sayles Finishing Co., Saylesville, R. I.
Richardson, Richardson P.	I	With Hamilton Mills, Lowell, Mass.
Sylvain, Charles E.	VI	Assistant to Superintendent Engineer, Ludlow Manufacturing Associates, Ludlow, Mass.
Walen, Ernest D.	VI	Laboratory Assistant-Textiles, Bureau of Standards, Washington, D. C.



## Evening Course, 1913

### Certificate Holders

Name	Course	Occupation
Abbott, Arthur G.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Allen, William J.	IVa	Dyer, Pacific Mills, Lawrence, Mass.
Anderton, Harry	Vb	See Evening, 1910.
Atkinson, Reginald C.	IVa	Laboratory Clerk, Silesia Worsted Mills, No. Chelmsford, Mass.
Bassett, Cyrus J.	Vb	With U. S. Bunting Co., Lowell, Mass.
Beaulieu, William E.	IIB	With No. Chelmsford Machine & Supply Co., No. Chelmsford, Mass.
Bell, Charles W.	VIa	Electrician, Gorham Mfg. Co., Providence, R. I.
Black, Alexander S.	Vb	Bookkeeper, Pacific Mills, Lawrence, Mass.
Breen, James D.	Vc	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Breen, John P.	Vb	With Bay State Mills, Lowell, Mass.
Butland, Ralph A.	VII	With Washington Mills, Lawrence, Mass.
Buzzell, Fred S.	VII	See Evening, 1912.
Charleton, Peter	VIa	Lowell, Mass.
Clarke, Wesley J.	VId	With Star Laundry Co., Methuen, Mass.
Classon, Walter H.	Vc	Loomfixer, Nashua Mfg. Co., Nashua, N. H.
Cote, Fred J.	VIa	With General Electric Co., Lynn, Mass.
Cox, Edward J.	Ia	See Evening, 1910.
Cudmore, Edward T.	VId	Machinist, Merrimack Mfg. Co., Lowell, Mass.
Cushing, Lester H.	Ia	Instructor, Lowell Textile School, Lowell, Mass.
Daskalakis, Efthimios Z.	Vc	See Evening, 1912.
Devine, Mary F.	IVa	Teacher, Public School, Lowell, Mass.
Doyle, John B.	VId	With M. Doyle & Son, Lowell, Mass.
Dunn, George C.	IVb	See Evening, 1908.
Ekengren, Hilding C.	IIIb	Clerk, Dickerman and McQuade, Lowell, Mass.
Forrest, William R.	VId	Lowell, Mass.
Freeman, George D.	VId	Clerk, James E. Freeman, Lowell, Mass.
Giffin, Charles H.	IIIa	Assistant Overseer, Merrimack Woolen Co., Dracut, Mass.
Giffin, George R.	IIIa	Overseer, Somerset Mfg. Co., Raritan, N. J.
Gile, Harold E.	IVa	Assistant Chemist, Ayer Mills, Lawrence, Mass.
Gordon, Loyd H.	VIa	Pattern Maker, Saco-Lowell Shops, Lowell, Mass.
xHannagan, Edward F.	IIB	Section Hand, Washington Mills, Lawrence, Mass.
Hanson, Edward	Ia	See Evening, 1908.
Herron, Alexander T.	Ia	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Higgins, Alfred	IIIa	Designer, Lyman Mills, Holyoke, Mass.
Hoelzel, Louis C.	VIa	With Washington Mills, Lawrence, Mass.
Howker, John	Ia	Foreman, Boott Mills, Lowell, Mass.
Innes, Andrew K.	Vb	Clerk, Arlington Mills, Lawrence, Mass.

Name	Course	Occupation
Jackson, Walter J.	IIa	Assistant Superintendent, Sutton's Mills, No. Andover, Mass.
xJarvis, Charles	Vb	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Jones, Herbert	Ia	Overseer, Killingly Mfg. Co., Killingly, Conn.
Kershaw, Samuel S.	Vb	See Evening, 1910.
Kirkpatrick, Lloyd A.	Ia	Assistant Superintendent, Merrimack Utilization Co., Lowell, Mass.
LaJeunesse, Joseph A.	IVc	See Evening, 1910.
Lambert, Seth	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Lang, William A.	Vc	With Lockwood, Greene and Co., Boston, Mass.
Learned, Frank E.	Va	Pattern Weaver, Pemberton Mills, Lawrence, Mass.
Leaver, Raymond J.	VIIb	Draftsman and Clerk, Arlington Mills, Lawrence, Mass.
Leonard, Charles W.	VII	With Merrimack Mfg. Co., Lowell, Mass.
Lowe, Harry F.	Va	With Merrimack Mfg. Co., Lowell, Mass.
McDonald, William A.	VIIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
McGowan, Annie C.	IIIb	With Merrimack Mfg. Co., Lowell, Mass.
McGurn, James P.	VIId	Machinist, B. & M. Car Shops, Billerica, Mass.
Maguire, Andrew F.	Vb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Manning, James B.	IVb	See Evening, 1911.
Maynard, Wilfred B.	VII	Salesman, Middlesex Co., Lowell, Mass.
Metcalfe, Walter B.	IIb	Second Hand, Silesia Worsted Mills, No. Chelmsford, Mass.
Miller, Ernest P., Jr.	Ib	With Cheney Bros., So. Manchester, Conn.
Monahan, Patrick H.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Murphy, Leo T.	Vc	Assistant Colorist, Bigelow-Hartford Carpet Co., Lowell, Mass.
Musard, Henry A.	Vc	Overseer, Alb. & E. Henkels, Bridgeport, Conn.
Nelson, Ernest H.	Ib	See Evening, 1900.
Nicoll, John	IVb	See Evening, 1910.
Orrell, Ernest R.	VIId	With W. W. Carey, Lowell, Mass.
Orrell, Frank L.	Vb	See Evening, 1909.
Preble, George A.	Vb-Vc	See Evening, 1908.
Quinn, James H.	VII	Cloth Inspector, Washington Mills, Lawrence, Mass.
Randall, William O.	IIb	With Wood Worsted Mills, Lawrence, Mass.
Redman, Henry S.	Ib	See Evening, 1904.
Redpath, Robert H.	VII	With Brightwood Mfg. Co., No. Andover, Mass.
Reynolds, James J.	Vc	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Rollins, Sidney R.	IIb	Clerk, American Woolen Co., Boston, Mass.
Shaw, William	VIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.

Name	Course	Occupation
Shearer, David D.	Vb	See Evening, 1912.
Sleeper, Robert R.	VII	See Day, 1900.
Soule, William N.	VId	Machinist, Lamson Co., Lowell, Mass.
Sugden, Albert G.	VII	See Evening, 1912.
Sullivan, Michael F.	VIa	See Evening, 1910.
Wainwright, Harold	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Whitman, William P.	IVb	See Evening, 1910.
Wilkinson, Joseph	VII	See Evening, 1912.
Younger, Andrew	IIIa	Instructor, Weaving, Lowell Textile School, Lowell, Mass.

### Day Course, 1914

#### Degree Graduates

Davis, Alexander D.	VI	See Day, 1913.
Horton, Chester T.	VI	See Day, 1913.
Leitch, Harold W.	IV	See Day, 1912.
Walen, Ernest D.	VI	See Day, 1913.

#### Diploma Graduates

Blake, Parker G.	VI	With Crimmins and Pierce, Boston, Mass.
Bradley, Raymond F.	VI	Salesman, Perkins and Corliss, Gloucester, Mass.
Brickett, Raymond C.	II	Clerk, Pentucket Mills, Haverhill, Mass.
Creese, Guy T.	IV	Chemist, Creese and Cook Co., Danvers, Mass.
Dorr, Clinton L.	VI	With Amoskeag Mfg. Co., Manchester, N. H.
Fisher, Russell T.	VI	Gloucester, Mass.
Lillis, Marvin H.	IV	Lawrence, Mass.
McGowan, Frank R.	VI	Student, Lowell Textile School, Lowell, Mass.

### Evening Course, 1914

#### Certificate Holders

Alter, Frederick A.	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Bakewell, Albert	Vb	With Boott Mills, Lowell, Mass.
Barnes, Hammond	Ia - Va	Student, Lowell Textile School, Lowell, Mass.
Bixby, Edward E.	IIIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Boyle, John E.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Brandy, William F.	IVa	Second Hand, Henry Klous, Inc., Lawrence, Mass.
Brown, James H.	VIa	With Lowell and Fitchburg St. Ry. Co., Forge Village, Mass.
Brown, Leon E.	VIa	Foreman Pattern Maker, Lamson Co., Lowell, Mass.
Burns, Richard L.	VIIb	Pattern Making, Tremont and Suffolk Mills, Lowell, Mass.
Campling, Frank	IIb	Section Hand, Pacific Mills, Lawrence, Mass.
Clark, John H.	IVa	Lawrence, Mass.

Name	Course	Occupation
Cochrane, William D.	IVa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Collins, Frank	VIa	Draftsman, C. G. Sargent's Sons Corp., Graniteville, Mass.
Cooper, George H.	Ia	With Vickery and Hill Publishing Co., Augusta, Me.
Cox, Edward J.	Ia	See Evening, 1910.
Delderfield, John W.	VIId	Storekeeper, Lamson Co., Lowell, Mass.
Donahue, William E.	VIB	Lowell, Mass.
Dowd, Martin F.	IIIa	Pattern Weaver and Dresser, U. S. Worsted Co., Lawrence, Mass.
Emmons, Harry I.	IVa	Assistant Dyer, Washington Mills, Lawrence, Mass.
Freeman, Ralph W.	IVb	See Evening, 1912.
Gibbons, James J.	VIa	Machinist, United Shoe Machinery Co., Lawrence, Mass.
Giffin, Charles H.	VII	See Evening, 1913.
Giffin, George R.	VII	See Evening, 1913.
Gill, Gardner G.	IVa	Student, Boston Y. M. C. A. School, Boston, Mass.
Gilman, Edward T.	VIa	Master Mechanic, Boott Mills, Lowell, Mass.
Haithwaite, Albert	Ia	With Appleton Co., Lowell, Mass.
Haldane, Andrew	Va	Section Hand, Pacific Mills, Lawrence, Mass.
Hall, Sydney H.	VIB	Draftsman, John Dennis Machine Co., Lowell, Mass.
Hammond, John N.	Vb	Second Hand, Sutton's Mills, No. Andover, Mass.
Hannagan, Edward F.	VII	See Evening, 1913.
Hanson, Winfield S.	IVa	Clerk, Union National Bank, Lowell, Mass.
Hartwig, Albert E.	Vb	With Washington Mills, Lawrence, Mass.
xHenzie, John J.	IIIa	Pattern Weaver, U. S. Worsted Co., Lowell, Mass.
xHerbst, Gustav F.	Va	New York City.
Herron, Alexander T.	IVa	See Evening, 1913.
Hill, Bruce	IIIa	With Arlington Mills, Lawrence, Mass.
Hill, Paul	VII	With Lawrence Dye Works, Lawrence, Mass.
Horman, Charles P.	IIIa	Loomfixer, Faulkner Mills, No. Billerica, Mass.
Howe, Charles W., Jr.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Howker, John	Va	See Evening, 1913.
Huse, Charles H.	VIB	Student, Lowell High School, Lowell, Mass.
Jackson, Walter J.	Vb	See Evening, 1913.
Johnson, Arthur O.	IVa	With Washington Mills, Lawrence, Mass.
*Kent, Arthur	VIId	
Kirkpatrick, Lloyd A.	Ia	See Evening, 1913.
LaPrise, Frank E.	IVa	Assistant Dyer, Pondicherry Woolen Mills, Bridgton, Me.
Laurin, Erick T. L.	VIB	With U. S. Cartridge Co., Lowell, Mass.
Learned, Frank E.	Vc	See Evening, 1913.
Leaver, Harold E.	IIB	Colorist, Arlington Mills, Lawrence, Mass.
Leith, Joseph E.	IIIa	See Evening, 1912.

Name	Course	Occupation
Lewis, Charles S.	VIa	Fireman, Silesia Worsted Mills, North Chelmsford, Mass.
Linehan, Thomas W.	VII	Second Hand, Finishing, Ayer Mills, Lawrence, Mass.
Looby, George A.	Vc	With Bigelow Hartford Carpet Co., Lowell, Mass.
Lowe, Harry F.	Vb	See Evening, 1913.
Luce, Harry A.	VII	Cloth Inspector, Musketaquid Mills, Lowell, Mass.
MacDonald, John F.	Va	Clerk, Boott Mills, Boston, Mass.
McElroy, Claude R.	VIId	With Auto Tire Vulcanizing Co., Lowell, Mass.
Mack, Clarence P.	IIIa	Pattern Weaver, U. S. Worsted Co., Lawrence, Mass.
Macnee, Forrest F.	IIb	With George E. Kunhardt, New York City.
Mahoney, Joseph	Vc	Loomfixer, Bigelow-Hartford Carpet Co., Lowell, Mass.
Mears, Lewis N.	IVa	In Dyehouse, Boston Rubber Shoe Co., Malden, Mass.
Milot, Aram A.	Vb	Student, Lowell Textile School, Lowell, Mass.
Mullen, Frank J.	VIId	Steamfitter, Carroll Bros., Lowell, Mass.
Nichol, Samuel J.	IVb	See Evening, 1911.
Nichols, Fernald H.	VIb	Student, Lowell High School, Lowell, Mass.
O'Brien, Frederick A.	VIb	Nashua, N. H.
Parker, John G.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Pickles, Wilfrid	Va	With Pacific Mills, Lawrence, Mass.
Pierce, Duncan H.	VII	Assistant New England Manager, Platt and Washburn Refining Co., Boston, Mass.
Pierce, Gordon J.	Vb	With Riverside Mills, Olneyville, R. I.
Pihl, Mansfred M.	VIb	Draftsman, U. S. Cartridge Co., Lowell, Mass.
Pinkham, Banford O.	VIId	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Playdon, Louis C.	Ia	With Pacific Mills, Lawrence, Mass.
Redpath, Robert H.	Vb	See Evening, 1913.
Roesler, Alfred	IIIa	With Wood Worsted Mills, Lawrence, Mass.
Rouine, Francis E.	VIb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Schmidt, Hartman F.	IIb - VII	Student, Lowell Textile School, Lowell, Mass.
Smith, Leonard	VIa	Methuen, Mass.
Steere, Samuel A.	Va	Overseer, Boott Mills, Lowell, Mass.
Stewart, George	Va	See Evening, 1911.
Stokham, Ernest F.	IVa	Assistant Chemist, Bigelow-Hartford Carpet Co., Lowell, Mass.
Torpey, Henry K.	VIb	Clerk in Dyehouse, Mass. Cotton Mills, Lowell, Mass.
Turner, Roscoe C.	IIb	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Twomey, Hugh	VIId	Lowell, Mass.
Woodbury, Eugene P.	VII	With George E. Kunhardt, Lawrence, Mass.
Younger, Andrew	VII	See Evening, 1913.



## POSITIONS HELD BY DAY GRADUATES

### 1899 - 1914

Directors of textile schools .....	2
Teachers .....	13
Mill vice-presidents .....	2
Mill treasurers and agents .....	11
Mill superintendents .....	17
Mill assistant superintendents .....	10
Mill foremen of departments .....	13
Assistant to superintendent .....	1
Mill auditors and accountants .....	3
Mill clerks .....	3
Second hands .....	8
Managers .....	17
Textile designers and fabric experts .....	17
Purchasing agents .....	2
In commission houses .....	3
Salesmen .....	10
Chemists, dyers and chemical salesmen .....	53
In government employ .....	6
In state employ .....	1
Textile manufacturing, unassigned .....	14
Industrial engineering .....	15
Mill engineering .....	8
Civil engineering .....	1
Electricians .....	1
Trade journalists .....	3
In business, textile distributing or incidental thereto .....	9
Other business .....	18
Students .....	3
Married Women .....	3
Employment not known .....	21
Not employed .....	4
Deceased .....	7
 Total .....	 299

THE HISTORY OF THE UNITED STATES

OF AMERICA

FROM THE FIRST DISCOVERY TO THE PRESENT TIME

BY JAMES M. SMITH

IN TWO VOLUMES

VOLUME I

NEW YORK

1850

THE NEW YORK PUBLISHERS

AND SONS

10 NASSAU ST.

NEW YORK

1850

THE NEW YORK PUBLISHERS

AND SONS

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10 NASSAU ST.

NEW YORK

1850

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**DAY APPLICATION BLANK**  
THIS SHOULD BE FILLED OUT AND SENT TO THE PRINCIPAL

**Lowell Textile School**  
**LOWELL, MASS.**

Date.....

Name in Full, .....

Date and Place of Birth, .....

Home Address, { .....  
City or Town State  
.....  
Street and Number

Parent or Guardian, .....

School last attended, .....

DEGREE COURSES. (Course should be indicated)  
VI-4 Textile Engineering IV-4 Chemistry and Textile Coloring  
1 General Textile Option  
2 Cotton Option  
3 Wool Option

DIPLOMA COURSES. (Course should be indicated)  
I-3 Cotton Manufacturing IV-3 Chemistry and Dyeing  
II-3 Wool Manufacturing VI-3 Textile Engineering  
III-3 Textile Design  
(General Textile Course)

Signature, .....

**ENDORSEMENT BY OFFICER OF SCHOOL LAST ATTENDED**

I hereby certify that.....  
the above applicant has completed the regular course at the.....  
High School, and has satisfactorily passed the following subjects, as specified  
on pages 71-82 of Catalogue of 1915-1916, making a total of ..... points.

REQUIRED SUBJECTS. POINTS.

ELECTIVE SUBJECTS. POINTS.

Signed : .....

Principal..... School, located

at..... State of .....

Date.....





# EVENING APPLICATION BLANK

THIS SHOULD BE FILLED OUT AND SENT TO THE PRINCIPAL

## Lowell Textile School

LOWELL, MASS.

DATE.....

I, ..... hereby  
apply for admission to the Lowell Textile School as **EVENING**  
student.

Name in Full, .....

Date and Place of Birth, .....

Home Address, { .....  
City or Town State  
.....  
Street and Number

Parent or Guardian, .....

Residence of Parent or Guardian, .....

School last attended, .....

(INDICATE COURSE)

- |  |                                    |
|--|------------------------------------|
| I. Cotton Spinning.                      | V. Weaving.                        |
| II. a—Woolen Spinning.                   | a—Cotton Weaving.                  |
| b—Worsted Spinning.                      | b—Woolen and Worsted Weaving.      |
| III. a—Textile Design.                   | c—Jacquard Weaving.                |
| b—Freehand Drawing.                      | VI. Engineering.                   |
| IV. Chemistry and Dyeing.                | a—Elements of Engineering.         |
| a—Elementary Chemistry.                  | b—Mechanical Drawing.              |
| b—Textile Chemistry and Dyeing.          | c—Machine Shop.                    |
| c—Analytical Chemistry                   | VII. Woolen and Worsted Finishing. |
| d—Textile and Analytical Chem-<br>istry. |                                    |

Signature, .....

ENDORSEMENT BY SOME OFFICER OF SCHOOL LAST ATTENDED

I hereby certify that .....  
the above applicant is duly qualified to pursue with profit the  
work of the Lowell Textile School.

SIGNED : .....

Principal ..... School, located

at ..... State of .....

Date .....

ASTOR LENOX TILDEN FOUNDATION

1892

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Lowell Textile School  
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*Moody Street and Colonial Avenue*





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## The Corporation

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JOHN JACOB ROGERS, Vice-President	ARTHUR G. POLLARD, Treasurer

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Appointed by the Governor and Council

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Treasurer, Boott Mills	

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Yarns  
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ARTHUR A. STEWART,  
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STEPHEN E. SMITH,  
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Power Weaving  
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Instructor in Mathematics, Physics and Electrical  
Engineering

## INSTRUCTORS—CONTINUED

- HOWARD D. SMITH, PH. D.,  
Instructor in General Chemistry and Qualitative  
Analysis
- RUSSELL B. STODDARD, A. B.,  
Instructor in Organic Chemistry
- JOHN C. LOWE,  
Instructor in Woolen and Worsted Yarns
- CHARLES H. JACK,  
Instructor in Machine Shop Practice
- LOUIS C. PLAYDON,  
Instructor in Cotton Yarns
- BERTRAND F. BRANN, S. B., M. S.,  
Instructor in Quantitative Analysis
- DAVID M. HUNTING, A. B., S. B.,  
Instructor in Mechanical Drawing and Mechanism
- ANDREW YOUNGER,  
Instructor in Weaving
- GEORGE O. RICHARDSON,  
Assistant Instructor in Chemistry
- CHARLES L. HOWARTH,  
Assistant Instructor in Dyeing
- RALPH E. GUILLOW,  
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- MARCUS T. COLE, S. B.,  
Evening Instructor in Mechanical Drawing
- E. ELIZABETH WHITNEY,  
Evening Instructor in Freehand Drawing
- GEORGE GOODCHILD,  
Evening Instructor in Cotton Yarns
- ARCHIBALD R. GARDNER, M. D.,  
Medical Adviser

# EVENING CLASSES

## COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

The evening classes commence the first Monday of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses.

Courses are offered in:

- I. (a) Cotton Spinning—2 and 3 years.  
(b) Knitting—1 year.
- II. (a) Woolen Spinning—2 years.  
(b) Worsted Spinning—3 years.
- III. (a) Textile Design—3 years.  
(b) Freehand Drawing—3 years.

#### IV. Chemistry and Dyeing.

- (a) Elementary Chemistry—2 years.  
General Chemistry including Inorganic and Organic.  
Qualitative Analysis.
- (b) Textile Chemistry and Dyeing—3 years.  
Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.
- (c) Analytical Chemistry—3 years.  
Laboratory Work and Lectures in Quantitative Analysis.
- (d) Textile and Analytical Chemistry—4 years.  
Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

In order to take Course (b), (c), (d), candidates must have certificate from Course (a), or show by examination or approved credentials that they have taken the equivalent work covered by this course.

- V. (a) Cotton Weaving—I year.
- (b) Woolen and Worsted Weaving—I year.
- (c) Dobby and Jacquard Weaving.

#### VI. Elements of Engineering—3 years.

Mechanics.

Steam.

Electricity.

Machine Shop—2 years.

Mechanical Drawing—3 years.

#### VII. Woolen and Worsted Finishing—I year.

#### Entrance Requirements.

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a grammar or high school are admitted upon certificate. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must



show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the two weeks previous to the opening of the evening school.

#### **Registration.**

Before entering the class a student must fill out an attendance card which can be obtained at the office or from the instructors in the various departments.

Any student who has filed an attendance card and who wishes to change his course must notify the office before making the change.

#### **Fees and Deposits.**

All evening courses are free to residents of Lowell. To those outside of Lowell the fee is \$5.00 per year for *each course of two nights per week*. For courses requiring three or more nights per week, the fee is \$10.

*All fees and deposits must be paid in advance.*

All students, whether from Lowell or not, taking course (a) Chemistry and Dyeing Department, are required to make a deposit of \$5.00 at the commencement of the course. A deposit of \$10.00 will be required of all students taking course (b), (c) or (d). This is to cover the cost of laboratory breakages, chemicals, apparatus, etc., and at the end of the year any unexpended balance is returned or an extra charge made for the excess breakage.

Every student who takes the Chemistry and Dyeing Course must check up his desk with the instructor of that department when he leaves the school. Any student not doing so will be charged 50 cents.

#### **Transportation.**

Free transportation is given students from Lawrence. A transportation blank can be obtained from the office and must be properly filled out by applicant and signed by the Superintendent or Overseer of the department in which said applicant is employed. This blank must then be handed in to the office together with the tuition fee before trip ticket will be given student.

Any student who leaves school before the end of the term should return his trip ticket immediately upon leaving.

#### **Supplies.**

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause.

Student's supplies will be sold from the Store Room every evening school night from 7.00 to 7.45 p. m.

#### **1. Cotton Spinning—2 Years**

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

#### **IIa. Woolen Spinning—2 Years**

#### **IIb. Worsted Spinning—3 Years**

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on

the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woollen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

### **IIIa. Textile Design—3 Years**

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

### **IIIb. Freehand Drawing—3 Years**

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

### **IVa. Elementary Chemistry—2 years**

General Chemistry including Inorganic and Organic.  
Qualitative Analysis.

### **IVb. Textile Chemistry and Dyeing—3 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.

**IVc. Analytical Chemistry—3 years**

Laboratory Work and Lectures in Quantitative Analysis.

**IVd. Textile and Analytical Chemistry—4 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

**Va. Cotton Weaving—1 year**

**Vb. Woolen and Worsted Weaving—1 year**

**Vc. Dobby and Jacquard Weaving—1 year**

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes

with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

- VIa. Elements of Engineering—3 years**
- VIb. Mechanical Drawing—3 years**
- VIc. Machine Shop Practice—2 years**

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at



the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

#### **VII. Woolen and Worsted Finishing—1 year**

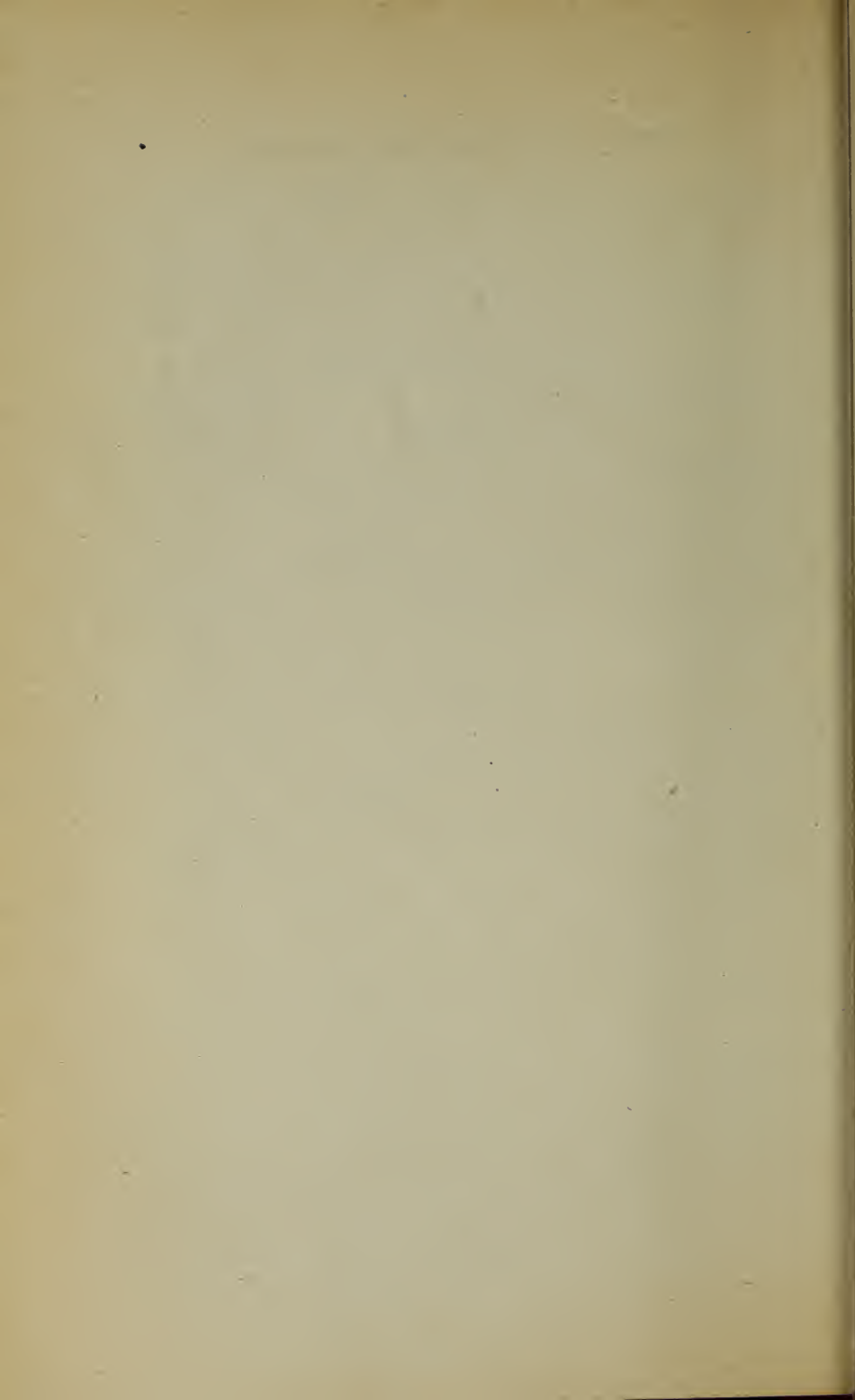
In this course machine work is supplemented by lectures and discussions pertaining to the many finishes given to woolen and worsted fabrics. The action of soaps, water, steam, heat and cold upon wools in cloth or the combination of this fibre with others used in commerce is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics.

# Schedule of Evening Classes 1915-1916

	Monday	Tuesday	Thursday	Friday
COTTON SPINNING		Mr. Playdon	Mr. Playdon	
First year	Mr. Goodchild			Mr. Goodchild
Second year		Mr. Smith		Mr. Smith
Third year		Mr. Smith		Mr. Smith
KNITTING				
WOOLEN SPINNING		Mr. Barker Mr. Howker	Mr. Barker Mr. Howker	
First year	Mr. Barker			Mr. Barker
Second year				
WORSTED SPINNING		Mr. Barker Mr. Howker	Mr. Barker Mr. Howker	
First year	Mr. Barker Mr. Lowe			Mr. Barker Mr. Lowe
Second year		Mr. Lowe	Mr. Lowe	
Third year				
TEXTILE DESIGN- ING	Mr. Bachmann			Mr. Mackay
First year		Mr. Bachmann	Mr. Mackay	
Second year		Mr. Mackay	Mr. Bachmann	
Third year				
FREEHAND DRAW- ING				
First year	Miss Whitney		Miss Whitney	
Second year		Miss Whitney		Miss Whitney
Third year		Miss Whitney		Miss Whitney
ELEMENTARY CHEMISTRY				
First year		Dr. Smith	Dr. Smith Mr. Richardson	
Second year	Mr. Stoddard Mr. Richardson		Mr. Stoddard	Mr. Stoddard Mr. Richardson
TEXTILE CHEMIS- TRY AND DYEING				
First year	Prof. Olney	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth
Second year	Prof. Olney	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth
Third year	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Prof. Olney	Mr. Sleeper Mr. Howarth
ANALYTICAL CHEMISTRY				
First year	Mr. Stoddard Mr. Richardson	Mr. Brann	Mr. Brann	Mr. Stoddard Mr. Richardson
Second year	Mr. Stoddard Mr. Richardson	Mr. Brann	Mr. Brann	Mr. Stoddard Mr. Richardson
Third year	Mr. Stoddard Mr. Richardson	Mr. Brann	Mr. Brann	Mr. Stoddard Mr. Richardson

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	Monday	Tuesday	Thursday	Friday
TEXTILE AND ANALYTICAL CHEM.				
First year	Prof. Olney	Mr. Brann		Mr. Stoddard Mr. Richardson
Second year	Prof. Olney	Mr. Brann		Mr. Stoddard Mr. Richardson
Third year	Mr. Sleeper Mr. Richardson	Mr. Sleeper Mr. Howarth	Prof. Olney Mr. Sleeper	Mr. Sleeper Mr. Howarth
Fourth year	Mr. Stoddard Mr. Richardson	Mr. Brann		Mr. Stoddard Mr. Richardson
COTTON WEAVING		Mr. Wilmot		Mr. Wilmot
WOOLEN & WORSTED WEAVING	Mr. Younger		Mr. Younger	
DOBBY & JACQUARD WEAVING	Mr. Wilmot		Mr. Wilmot	
MECHANICS	Mr. Hunting		Mr. Hunting	
STEAM ENGINEERING		Mr. Perkins		Mr. Perkins
ELECTRICAL ENGINEERING		Mr. Lupien		Mr. Lupien
MECHANICAL DRAWING				
First year		Mr. Cole	Mr. Cole	
Second year	Mr. Cole			Mr. Cole
Third year	Mr. Cole			Mr. Cole
MACHINE SHOP PRACTICE				
First year			Mr. Jack	Mr. Jack
Second year	Mr. Jack	Mr. Jack		
WOOLEN & WORSTED FINISHING	Mr. Stewart			Mr. Stewart



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LOUIS C. PLAYDON—Instructor in Cotton Yarns

BERTRAND F. BRANN, S. B., M. S.—Instructor in Quantitative Analysis

DAVID M. HUNTING, A. B., S. B.—Instructor in Mechanical Drawing and Mechanism

ANDREW YOUNGER—Instructor in Weaving

GEORGE O. RICHARDSON—Assistant Instructor in Chemistry

CHARLES L. HOWARTH—Assistant Instructor in Dyeing

RALPH E. GUILLOW—Instructor in Physical Culture

MARCUS T. COLE, S. B.—Evening Instructor in Mechanical Drawing

E. ELIZABETH WHITNEY—Evening Instructor in Freehand Drawing

GEORGE GOODCHILD—Evening Instructor in Cotton Yarns

ARCHIBALD R. GARDNER, M. D.—Medical Adviser

## Students and Equipment

This has been a busy and growing year at the School. Provision was made at the last session of the State Legislature for the addition to our power plant of a new water tube boiler of 500 h. p., and an organic chemistry laboratory, and our engineers and skilled laborers, under whose supervision most of such work is done, have been kept very busy during the summer vacation. The Heine boiler is now in place and all connections made. The organic laboratory is nearing completion and will be in use by the opening of the second term, February 1, 1916, the date at which the Freshmen choose their four year course. In addition considerable work has been done in rearranging rooms and in completing the grading and fencing of the school grounds.

The old boiler house has allowed for two more floors which have been laid, the second floor permitting of the enclosure of the openers and pickers of the Cotton Yarn Department within fire proof walls, while the upper floor affords a large and much needed locker and rest and social room for the day students.

The increase in the number of Freshmen this year over last is 65 per cent., the largest increase since the school was established.

We have had to refuse 130 bright youths who applied for evening instruction, mostly desiring the course in Mechanics. This course is a very thorough one, comprising, first; thorough instruction in the fundamental principles of Mechanics and in Machine Drawing followed by practical work in the Machine Shop. While we have a varied and valuable equipment of shop machinery and machine tools, we lack floor space for classes, hence we had to refuse this large number of applicants. This is unfortunate as the demands of the makers of munitions have created a dearth of mechanics in the textile mills and textile machinery shops. Our estimates for state aid at the coming session of the Legislature, in addition to the ordinary appropriation for maintenance, call for a machine shop that will enable us to provide for these would be mechanics.

ANNUAL REPORT  
OF THE  
TRUSTEES  
OF THE  
LOWELL TEXTILE SCHOOL  
OF  
LOWELL, MASSACHUSETTS  
FOR THE YEAR ENDED  
JUNE 30, 1915



BUTTERFIELD PRINTING COMPANY  
LOWELL, MASS.  
1916

## *A Foreword*

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The following papers have been prepared by Alumni of this school and have been presented before meetings of scientists and manufacturers or have been used as magazine articles.

They are inserted in this bulletin to show the character of the work in which the Alumni are engaged and the diversified demands for which the courses prepare.



## Comparison of Strip and Grab Method of Tensile Strength Determination

E. DEAN WALEN, B. T. E., Lowell Textile School, 1914.

Laboratory Assistant, United States Bureau of Standards.

In the determination of tensile strength of tire fabric various types of test specimens have been suggested, of which at present there are two which are commonly used, and referred to as the strip method and the two inch and one inch grab method.

The strip method consists of cutting the strip  $1\frac{1}{2}$  inches wide by 8 inches long, and then ravelling from  $1\frac{1}{2}$  inches to 1 inch in width, thus leaving a fringe of  $\frac{1}{4}$  inch on either side as shown in Fig. 1. The specimen thus prepared is placed in the tensile strength machine, three (3) inches between jaws, and the stress at the breaking load recorded.

The appearance of the sample at the time just previous to the rupture may be represented by Fig. 2 in which 1 and 2 represent yarns which have become disengaged from the yarns running at right angles to them and consequently have been made straight.

These yarns do not break until after the body of the sample (a) has broken, and apparently do not carry their proportionate amount of the stress as measured by the testing machine. Inasmuch as the external appearance of the sample does not give an adequate conception of the magnitude of the stresses carried by the yarns, it was thought advisable to determine the relative amount of stress carried by the yarns which are straightened and do not break.

If specimens of various widths are broken, their strength is either directly proportional to the number of threads or, is made either more or less by the difference in position between the extreme outside threads and the inside threads.

In considering the first assumption, the equation of a curve obtained from plotting tensile strength against the corresponding number of threads in the sample would be:

$$y = bx.$$

Here  $y$  = tensile strength of specimen;  $x$  = number of threads, and  $b$  = slope of the curve.

An average single thread break at any point may be obtained by dividing the tensile strength ( $y$ ) by the corresponding number of threads ( $x$ ); and the equation of the curve obtained by plotting average single thread breaks against the corresponding number of threads would be:  $y_1 = b$ , where  $y_1$  = average single thread break. This curve would be a straight line with a zero slope and therefore parallel to the ( $x$ ) axis.

If the outside threads did not carry the same average stress as the inside threads, assuming the same elongation and same number of straightened threads for samples of different widths, the curve obtained by plotting the tensile strength against the corresponding number of yarns in the sample would be:

$$y = \pm a + (bx)$$

where  $y$  = tensile strength of specimen.

$b$  = slope of curve.

$x$  = number of threads.

$a$  = a constant depending upon the difference in stress carried by outside and inside threads.

The average single thread break would be, represented by the equation:  $y_1 = \pm \frac{a}{x} + b$ ; where  $y_1$  = an average single thread break.

The slope of this equation would be:  $\pm \frac{a}{x^2}$

This curve would not be parallel to the ( $x$ ) axis.

Strips varying in width of from 5 to 45 threads and 8 inches long were prepared from 17¼ ounce 23 threads square tire fabric and allowed to remain in an atmosphere of 65% relative humidity and (21°C) 70°F temperature for a period of three hours. It has been found by experiment that the moisture condition of the fabric is approximately on equilibrium with that of the atmosphere at the end of this time. The samples were placed in a testing machine, 3 inches between jaw and broken using a speed of the pulling jaws of approximately 12 inches per minute, and the breaking stress obtained.

The curve B Fig. (3) was obtained by plotting the tensile strength against the corresponding number of threads. The average single thread break is represented by curve D. It can be readily seen that the tensile strength is directly proportional to the number of threads and that the average single thread break

is the same regardless of the width of sample tested, hence, the outside threads carry their proportional part of the apparent stress as measured by the tensile strength machine.

It will be noted that beyond 35 threads, curve B falls. This is due to the difficulty of placing the sample in the jaws in such a way as to obtain a break without tearing. Several good breaks were obtained and these results would warrant extending the curve.

In order to further ascertain the amount of stress carried by the outside threads, elongation measurements were made on various width specimens and the total stretch at the breaking load was found to be sensibly the same for all widths. Single strands were then subjected to a stress sufficient to produce the elongation at the breaking load of the specimen and it was found that they carried practically the same stress as the average single thread break calculated from curve B. It was also observed that the same number of outside threads failed to break in samples of various widths.

Curve A was obtained by multiplying the average single strand yarn strength, found by breaking single yarns, by a number corresponding to the number of threads in the strips. If the strip method were a single strand test, curve B would coincide with curve A.

In the case of the filling it was found that the corresponding curve B was much closer to the corresponding curve A than in the case of the warp.

The 2 inch and 1 inch grab method consists of cutting the sample  $2\frac{1}{2}$  inches wide and 8 inches long. The sample is clamped in the machine with a 2 inch upper jaw and a 1 inch lower jaw, and 3 inches between jaws as shown in Fig. 4.

Practically the same procedure was followed in applying the grab method to the same fabric. The sample was cut  $2\frac{3}{8}$  inches wide and 8 inches long. The top jaw was kept a constant width of 2 inches and varying widths of the bottom jaw were used gripping from 6 yarns to 46 yarns. The width between jaws was 3 inches.

The result obtained from plotting the tensile strength against the corresponding number of threads gripped by the bottom jaw is shown by curve C Fig. 3.

An average single thread break is obtainel by dividing the tensile strength of the fabric by the number of yarns gripped by the bottom jaw, as shown by curve D.

It can readily be seen that the observed relative strength of the fabric is affected by the width of lower jaw, and there is no logical reason for selecting any point on the curve C Fig. 3 as representing the true fabric strength.

The pronounced hump in curve C is due to the varying amount of stress carried by the strands not in direct tension. This is indicated by Fig. 4 and 5.

Lines were drawn on the sample before it was put in the jaws, as shown by Fig. 4. The distortion of these lines as shown by Fig. 5, at a time just before the break, shows very clearly that the stress carried by the yarns not in direct tension is an important one and that the deformation is not such as would be expected to approximate practical conditions.

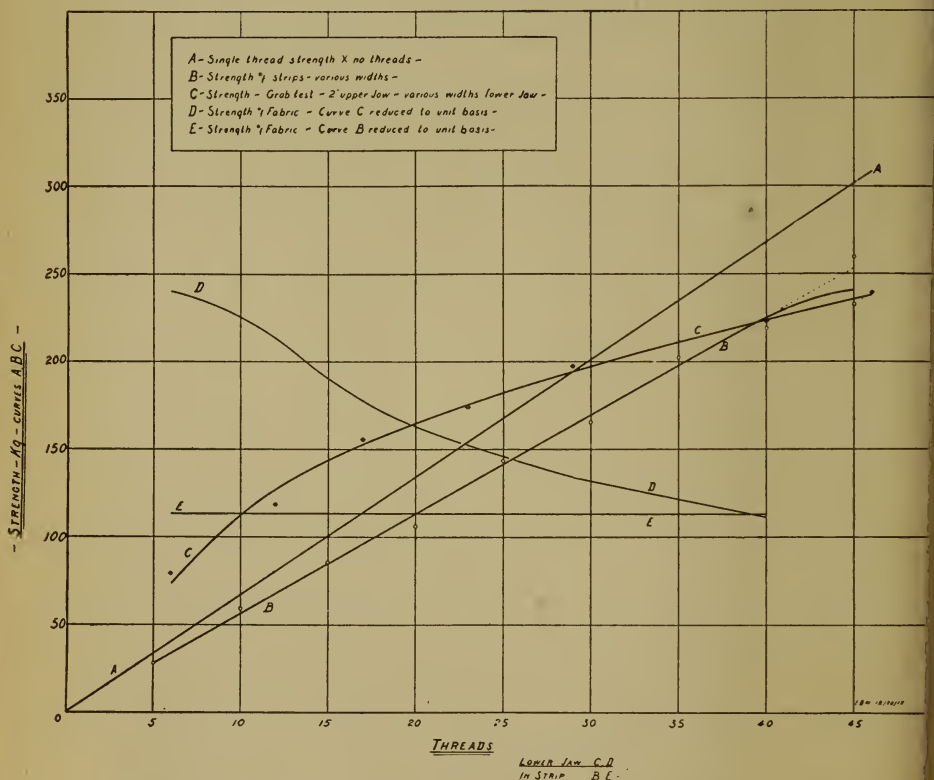


FIG. 3

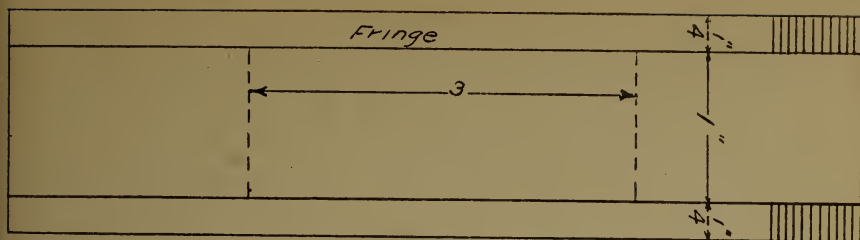


FIG. 1.

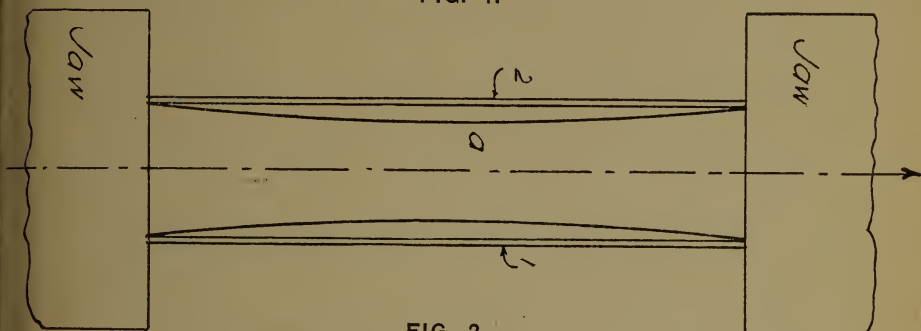


FIG. 2.

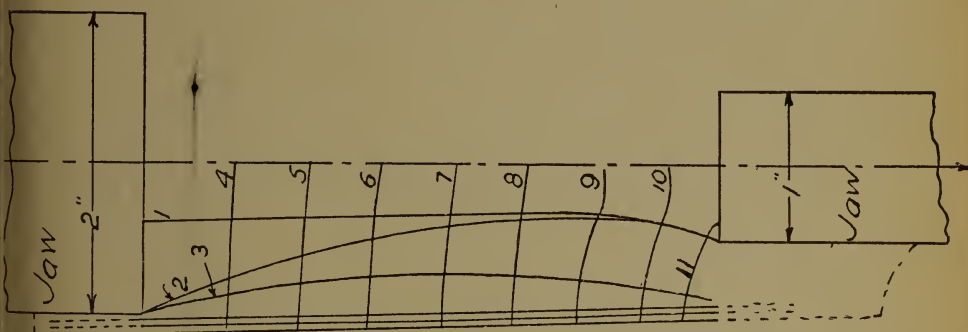


FIG. 4.

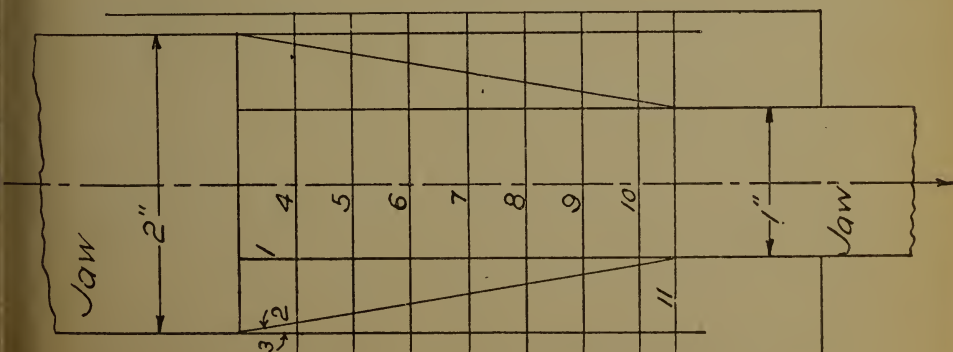


FIG. 5.



## The Young Man and the Textile Industry

EDWARD S. SWIFT, '02, Lowell Textile School

(This article was written for "America," Vol. XIV, No. 13.)

The textile industry may appeal to some young men whose vocation seems to be neither to the more purely classical nor to the strictly scientific professions. It is an industry which combines science and business in a manner to some extent unique; and the science of it is every day growing in importance, hence the necessity of giving particular attention in this article to a special feature of the industry, namely, the textile school.

Perhaps not many students know of the existence of two new professions which, in recent years, have come into being in the United States. Owing to the establishment of textile schools it is now possible for the young man to become a Bachelor of Textile Engineering (B. T. E.), or a Bachelor of Textile Dyeing (B. T. D.). The possessor of one of these degrees has been well trained in the fundamental principles of science, as applicable to the particular field of his choice, whether it be textile engineering or textile chemistry and coloring. Where such degrees are given it is maintained that, for these important branches of industry, as thorough and broad training is required as that demanded in any of the recognized branches of applied science, and, accordingly, courses have been built up on a secure framework of science and mathematics directed to useful application in the broad textile field.

The textile field is indeed far-reaching. It embraces many trades, and this is rather an attractive feature of the outlook, because the textile student is not obliged to determine absolutely, in the beginning, just what his life's work will be. During his school-course he will decide in general what line he is to follow, but, even at graduation, there will still be some room for choice, for there will be more than one line in which he can apply all that he has learned. At the school he will, for example, decide whether he wishes to devote himself to the cotton industry or to the woolen industry or to the silk or to the flax industry; then he will decide what particular science he will apply to that industry, according to his talent. He may apply mechanics, mathematics, physics, chemistry; he may fit himself for commerce, mill-management or teaching, etc. However, such a

decision may be held somewhat in abeyance until after graduation, when it will be influenced by the opportunities offered. These opportunities may be in the textile business itself or in allied industries.

The textile industry is divided into two principal branches, textile manufacturing and textile commerce. For one choosing the manufacturing career, there are three methods of learning the business; first, by entering the mill direct, as an operative; second, by entering the mill-office or counting-room, as a clerk; third, by entering either the mill or the office, but with a preparatory education obtained in a textile school. Reason and experience testify to the superiority of the third method. Men have reached the highest positions without any textile school training naturally enough, since these schools are of comparatively recent origin in the United States, but the influence of such institutions today is well attested by the following list of positions attained by day graduates from one of them, from the year 1899 to the year 1913:

Directors of Textile Schools .....	3
Teachers .....	14
Mill Vice-Presidents .....	3
Mill Treasurers and Agents .....	8
Mill Superintendents .....	22
Mill Assistant Superintendents .....	11
Mill Foremen of Departments .....	12
Mill Auditors and Accountants .....	3
Managers .....	11
Textile Designers and Fabric Experts .....	19
In Commission Houses .....	4
Salesmen .....	8
Purchasing Agents .....	2
Chemists, Dyers and Chemical Salesman .....	48
Electricians .....	1
Industrial Engineers .....	8
Mill Engineering .....	9
In Government Employ .....	5
In State Employ .....	1
Trade Journalists .....	3
In Business, Textile Distributing or Incidental Thereto .....	10

The mill manager of the future must become more and more a man of science. Progress in mechanical invention, and the

problems in fuel, steam, electricity and labor make this imperative.

In a four years' course at a first class textile school, a young man may gain more valuable information for textile manufacturing than could be acquired in a factory, under average conditions, in a lifetime.

It is not the intention of the writer to undervalue practical experience, but rather to maintain that practical experience should be preceded by a thorough "schooling" in the theory and principles of the business; especially, since it is so difficult to become a mill expert from the limited opportunities for study and observation granted to the mill employee. The practical experience gained in the textile school is far from being a negligible quantity. There the student has before him the greatest variety and latest models of the machines in which he is interested, with plenty of opportunity for experimentation, and with experienced professors at hand to explain all difficulties.

When a young man graduates with honorable rank from a model textile school, from the manufacturing course, he is well on towards being a mill-manager or superintendent; but there are some things in regard to him which cannot be fully determined in the school. They pertain to his character. Has he the maturity, the morality, and the practical business-sense required for a responsible position? Can he manage "help?" That is, has he a personality which will command the respect and willing, efficient service of his employees? These and similar points can be fairly well settled by a period of trial in a somewhat subordinate position, but not in one which is too subordinate. Why should a textile school graduate begin all over again at the bottom of the ladder, when he has already spent four years in climbing one of the best "ladders" to a mastery of the business, and paying for it besides?

Some of the more zealous students gain practical experience by spending most of their long summer vacations working in a mill, and have so demonstrated their abilities that they have been called to be assistant superintendents of those mills after graduating. In one instance, a student went to work for the summer, without pay, in order to have the privilege of going from one department to another and acquiring a general knowledge of the mill.

If the graduate is more inclined to the commercial branch of the industry, a textile education is always a good recommenda-

tion for positions in cloth and yarn commission houses, especially for fabric analysis and designing; also in offices of cotton and wool fiber, cloth and yarn brokers.

The bachelor of textile dyeing has a promising field which seems to have received a new and strong impetus towards expansion in this country with the efforts to become less dependent upon Europe for our dyestuffs. He will look for his opportunities in the mills with their chemistry and dyeing departments, in the independent dye houses, in the dyestuff manufactories, and with the wholesale jobbers of textile chemicals and colors.

Assistant professors for the textile schools are sometimes chosen from among the graduates.

The above list of positions attained by graduates is representative of a three-year diploma course at the Lowell Textile School, the four-year degree course not having been established at that time. The greater number of day students matriculate from high schools or academies. Some, however, are already graduates of colleges or technological institutes before entering the textile school.

Full particulars in regard to the courses in the various textile schools may be obtained by applying for their catalogues. The schools in the United States at present are:

Lowell Textile School, Lowell, Mass.; Philadelphia Textile School, Philadelphia, Pa.; New Bedford Textile School, New Bedford, Mass.; Bradford-Durfee School, Fall River, Mass.; Lawrence Textile School, Lawrence, Mass.; Rhode Island School of Design, Providence, R. I.; Columbus Textile School, Columbus, Ga.; Georgia School of Technology, Atlanta, Ga.; Agricultural and Mechanical Arts College, Starkville, Miss.; Agricultural and Mechanical Arts College, W. Raleigh, N. C.; Agricultural and Mechanical Arts College, Clemson, S. C.; Texas Textile College, College Station, Texas; Technological School, Spray, N. C.

Some of these have only textile departments.

Statistics from "Vol. X, Thirteenth Census of the United States, Department of Commerce, 1910," may be of service to young men considering textile industry as a career. They relate to the Combined Textile Industries in 1909, in the United States, comprising eight distinct industries, designated as follows: (1) Cotton goods, including small wares; (2) woolen, worsted and felt goods and wool hats; (3) carpets and rugs, other than

rag; (4) hosiery and knit goods; (5) silk and silk goods; (6) cordage and twine, and jute and linen goods; (7) shoddy; (8) dyeing and finishing textiles:

Number of establishments, 5,352; persons engaged in the industry, 915,858; proprietors and firm members, 3,522; salaried employees, 31,208; wage earners (average number), 881,128 (about one-half females); capital, \$1,841,242,131; expenses, \$1,488,817,311; salaries, \$49,123,634; wages \$335,398,736.

The textile business nearly trebled itself in the United States in the thirty years from 1879 to 1909, and the principal cotton manufactories contributed 49.2 per cent. of the total value of products for the eight textile industries, and employ 57.7 per cent. of the total number of wage earners.



Annual Report of the Trustees of the Lowell  
Textile School for the year ended  
June 30, 1915

*To the Honorable Senate and House of Representatives of the  
Commonwealth of Massachusetts in General Court Assembled.*

The trustees of the Lowell Textile School of Lowell, Mass., respectively submit the following report for the year ending June 30, 1915, in compliance with chapter 248, Acts of 1904, which provides:—

SECTION 1. The trustees of every textile school receiving financial aid from the commonwealth shall, on or before the thirtieth day of January in each year, make to the general court a report containing a concise statement as to the buildings, equipment and resources of the school, the courses and methods of instruction, the number of teachers and students during the previous calendar year, and the number of teachers and students, if any, who graduated therefrom. The report shall also contain a statement verified by the oath of the treasurer of the school, and in such form as the auditor of accounts of the commonwealth shall prescribe, showing separately the amounts received during the previous calendar year from tuition fees, from the commonwealth, from any city or town, and from all other sources, and also showing the expenditures of the school during the same period, under the heads of maintenance, construction, and new equipment, and also the financial condition of the school at the close of said year.

Chapter 445, Acts of 1912, so amends the foregoing act as to change the fiscal year of textile schools from the calendar year to the school year. It reads as follows:—

SECTION 1. The fiscal year for which appropriations for textile schools shall be made and for which the treasurers of the said schools shall make their reports shall for the year nineteen hundred and thirteen begin on January first and continue to July first, nineteen hundred and fourteen; and thereafter the said year shall begin on the first day of July and shall continue until the first day of July of the succeeding year.

SECTION 2. So much of chapter two hundred and forty-eight of the acts of the year nineteen hundred and four and of chapter two hundred and eleven of the acts of the year nineteen hundred and five as is inconsistent herewith is hereby repealed.

## LOWELL TEXTILE SCHOOL

TRUSTEES OF THE LOWELL TEXTILE SCHOOL IN ACCOUNT  
WITH A. G. POLLARD, TREASURER.

LOWELL, MASS., June 30, 1915.

## MAINTENANCE ACCOUNT

Deficiency for last fiscal year ..... \$ 780.80

## Paid for—

Teachers' salaries .....	\$36,359.05
Administration salaries .....	6,175.92
Employees' salaries .....	7,507.25
General expense .....	7,303.32
Supplies .....	5,351.74
Power and light .....	5,117.12
Special service .....	782.23
Contingent account .....	2,726.17
Chemistry deposit .....	1,189.66
Reserve for depreciation .....	2,189.86
	<hr/>
	\$74,702.32

## Deduct ledger debits as follows:—

## Cash received from—

Special service .....	\$ 909.61
Interest .....	81.04
Chemistry deposit .....	2,584.35
Supplies .....	1,913.52
Telephone tolls .....	13.66
Miscellaneous .....	36.22
Rebate .....	289.66
Stock .....	300.02
	<hr/>
	6,128.08

Net cost of maintenance ..... 68,574.24

Total cost, including deficiency ..... \$69,355.04

## Cash received from—

Commonwealth of Massachusetts .....	\$45,000.00
City of Lowell .....	8,604.00
Tuitions .....	13,737.48
Deficiency last year (appropriated by chapter 63, Resolves of 1915) .....	780.80
	<hr/>
	68,122.28

Deficiency ..... \$ 1,232.76

## EQUIPMENT ACCOUNTS

*Chemistry and Dyeing Equipment Account*

Balance June 30, 1914 .....	\$ 2,413.27	
Amount received from sale of tank .....	17.37	
Amount expended .....		\$ 343.48
Balance June 30, 1915 .....	\$ 2,087.16	

*Finishing of Cotton Fabrics Equipment Account*

Balance June 30, 1914 .....	\$ 960.74	
Amount expended .....		6.26
Balance June 30, 1915 .....	\$ 954.48	

*Electrical Laboratory Equipment Account*

Balance June 30, 1914 .....	\$ 2.98	
Transfer to general equipment account .....	2.98	

*Textile Testing Equipment Account*

Balance June 30, 1914 .....	\$ 508.59	
Difference in exchange .....	119.79	
Amount expended .....		111.68
Balance June 30, 1915 .....	\$ 516.70	

*General Equipment Account*

Commonwealth of Massachusetts .....	\$15,000.00	
Transfer electrical laboratory equipment .....	2.98	
Amount expended, including boiler house efficiency .....		10,442.36
Balance June 30, 1915 .....	\$ 4,560.62	

*New Boiler House*

Balance June 30, 1914 (overdrawn) .....	\$ 4,721.26	
Transfer to general equipment account .....	4,721.26	

Total paid for equipment .....		<u>\$10,903.78</u>
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## SUMMARY OF RECEIPTS AND EXPENDITURES BROUGHT DOWN

	Received	Paid
Cash on hand June 30, 1914 .....	\$ 694.08	
Maintenance, including deficiency 1913-14 .....	68,122.28	\$ 69,355.04
Finishing equipment .....		6.26
Chemistry and dyeing equipment .....		343.48
Textile testing equipment .....		111.68
General equipment chapter 63, Resolves of 1915 ....	15,000.00	10,442.36
	<u>\$ 83,816.36</u>	<u>\$ 80,258.82</u>
Loans .....	32,500.00	32,500.00
	<u>\$116,316.36</u>	<u>\$112,758.82</u>
Cash on hand June 30, 1915 .....		3,557.54
	<u>\$116,316.36</u>	<u>\$116,316.36</u>

## LOWELL TEXTILE SCHOOL

## FINANCIAL CONDITION JUNE 30, 1915

*Assets*

Land .....	\$105,639.00	
Buildings .....	312,902.48	
		\$418,541.48
Machinery and other equipment .....		268,405.40
Supplies .....		15,577.44
Reserve fund .....		2,180.86
Cash on hand June 30, 1915 .....		3,557.54
		<u>\$708,271.72</u>

*Liabilities*

Notes payable on demand .....	50,000.00
Resources .....	<u>\$658,271.72</u>

## TRIAL BALANCE JUNE 30, 1915

	DR.	CR.
Lowell Textile School .....		\$647,436.55
Land .....	\$105,639.09	
Machinery and equipment .....	268,405.40	
Supplies .....	15,577.44	
Notes payable .....		50,000.00
Southwick Hall .....	142,120.30	
Kitson Hall .....	31,390.91	
Weave building .....	22,150.07	
Boiler house .....	45,472.80	
Weave wing extension .....	30,061.73	
Falmouth Street building .....	15,000.00	
Colonial Avenue building .....	21,985.41	
Cash .....		366.50
	<u>\$697,803.15</u>	<u>\$697,803.15</u>

## SPECIAL TRUST FUND ACCOUNT JUNE 30, 1915

*Special Book Prize Fund*

Amount contributed by Prof. Louis A. Olney for prizes of books to honor day students in chemistry and dyeing:—

	DR.	CR.
Cash on hand June 30, 1914 .....	\$61.28	
Amount received .....	30.00	
Amount expended .....		\$30.00
Balance on hand June 30, 1915 .....		61.28
	<u>\$91.28</u>	<u>\$91.28</u>

*Evening Graduates Book Fund*

Amount contributed by Evening Chemical Alumni Association:—

Amount received .....	\$30.00	
Balance on hand June 30, 1915 .....		\$30.00
	<u>\$30.00</u>	<u>\$30.00</u>

The above special funds are not included in the general account.

*To the Trustees of the Lowell Textile School.*

This is to certify that I have examined the books of the treasurer of the Lowell Textile School for one year ending June 30, 1915, and find them to be correctly kept and properly vouched.

A. A. LUDWIG,  
*Auditor for the Corporation.*

LOWELL, MASS., Jan. 26, 1916.

LOWELL, MASS., Jan. 26, 1916.

I certify that the foregoing is a correct statement of the receipts and expenditures on account of the Lowell Textile School during the year ended June 30, 1915, and of the financial condition of the corporation at the close of said period.

A. G. POLLARD, *Treasurer,*  
*Trustees of the Lowell Textile School.*

LOWELL, MASS., Jan. 26, 1916

MIDDLESEX, SS.

Subscribed and sworn to before me this day.

JOHN F. SAWYER,  
*Justice of the Peace.*

Approved as to form.

ALONZO B. COOK,  
*Auditor.*

## STATEMENT OF LAND, BUILDINGS, EQUIPMENT, RESOURCES, ETC.

## LAND

Land bounded by Standish, Riverside and Moulton streets and Colonial Avenue and Merrimack River, about 14 acres .....	<u>\$105,630.00</u>
--	---------------------

## BUILDINGS

Southwick Hall: 80 by 265 feet; three stories, with two-story wings and finished basement under all; cost .....	\$142,120.30
Kitson Hall: 68 x 252 feet; one story and basement, and two additional floors of old boiler house, 63 by 68 feet .....	46,266.07
Falmouth Street building: 192 by 80 feet; three stories with sub-basement under head house; cost .....	67,211.80
Colonial Avenue laboratories: one story, 200 by 57 feet, and 60½ by 55 foot basement .....	21,985.41
New boiler and engine house, with coal pockets and subway ....	35,318.90
Total cost of buildings .....	<u>\$312,092.48</u>

The floor space is occupied as follows:—

	Sq. Ft.
Cotton yarns and knitting .....	16,200
Woolen and worsted yarns .....	28,160
Decorative art .....	1,446
Textile design .....	15,360
Power weaving .....	15,360
Chemistry and dyeing .....	28,400



Finishing .....	10,606
Power plant .....	10,047
Mechanical and electrical engineering .....	24,297
Assembly and physical culture halls .....	10,800
Administration .....	2,930
Entrances, corridors, stairways, toilets, store locker and lunch rooms .....	14,487
Total floor space .....	178,093
Cost per square foot of floor space .....	<u>\$1.74+</u>

## EQUIPMENT

Cotton yarn department .....	\$ 37,064.25
Woolen and worsted yarn department .....	47,943.98
Textile design and power weaving department .....	33,343.07
Chemistry and dyeing department .....	24,789.40
Textile engineering department .....	37,111.26
Finishing department .....	30,017.52
Language department .....	258.50
Corridors .....	237.50
Trustees' room .....	881.40
Lecture hall .....	481.36
General office .....	943.60
Principal's office .....	806.65
Janitor's room .....	417.56
Lunch room .....	214.01
Storeroom .....	206.75
Library .....	3,007.21
Students' room .....	704.00
Physical culture apparatus .....	558.29
Southwick Hall .....	11,495.79
Kitson Hall .....	1,326.00
Weave building and head house .....	4,466.80
Power plant .....	15,555.15
Miscellaneous equipment .....	16,574.45
Total .....	<u>\$268,405.40</u>
The increase in the value of equipment is .....	<u>\$5,363.95</u>

## SUPPLIES

Cotton yarn department .....	\$ 82.45
Woolen and worsted yarn department .....	651.37
Textile design and power weaving department .....	3,124.97
Chemistry and dyeing department .....	9,617.00
Textile engineering department .....	196.15
Finishing department .....	609.65
Office .....	149.27
Janitor's rooms .....	35.95
Storeroom .....	1,110.63
	<u>\$15,577.44</u>

## COURSES OF INSTRUCTION

## CLASSIFICATION OF DAY STUDENTS BY COURSES

	First Year	Second Year	Third Year	Fourth Year
Cotton manufacturing .....	5	2	2	—
Wool manufacturing .....	10	6	3	—
Textile design .....	2	12	1	—
Chemistry and dyeing .....	22	15	8	6
Textile engineering .....	9	14	8	2
Special .....	1	—	1	—
Course not chosen .....	1	—	—	—
	50	49	23	8
Total .....	130			

## CLASSIFICATION OF EVENING STUDENTS BY COURSES

	First Year	Second Year	Third Year	Post- graduate
Cotton spinning .....	32	15	8	—
Knitting .....	11	—	—	—
Woolen and worsted spinning .....	38	16	12	—
Textile designing .....	43	17	13	—
Freehand drawing .....	33	4	6	1
Elementary chemistry .....	55	29	—	—
Textile chemistry and dyeing .....	8	4	3	—
Analytical chemistry .....	8	1	—	—
Cotton weaving .....	24	—	—	—
Woolen and worsted weaving .....	26	—	—	—
Jacquard weaving .....	2	—	—	—
Mechanics .....	150	—	—	—
Steam engineering .....	—	21	—	—
Electricity .....	—	—	19	—
Mechanical drawing .....	72	25	18	—
Machine shop .....	40	15	—	3
Mathematics .....	23	—	—	—
Woolen and worsted finishing .....	15	—	—	—
	580	147	79	4
Total .....	810			
Names counted twice .....	77			
Net total .....	733			

## LOWELL TEXTILE SCHOOL

## NUMBER OF STUDENTS

Day classes .....	130
Evening classes .....	733
Total .....	863
Graduated:—	
Day classes .....	8
Evening classes .....	112
Total .....	120

## TEACHERS

## NUMBER BY DEPARTMENTS

*Day and Evening Classes*

Cotton yarn .....	3
Woolen and worsted yarn .....	3
Textile design and weaving .....	5
Chemistry and dyeing .....	7
Textile engineering .....	6
Finishing .....	1
Language and history .....	1
Physical culture .....	1
Total .....	27

*Evening Classes Only*

Cotton yarn .....	1
Textile design and weaving .....	1
Textile engineering .....	1
Total .....	3
Average number of students per teacher .....	32

## ROSTER OF SCHOOL OFFICERS AND INSTRUCTION CORPS

## PRINCIPAL

Charles H. Eames, S.B., Massachusetts Institute of Technology, 1897.  
Experience: secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Company, Lowell, Mass., and engineer with Stone & Webster, electrical engineers, Boston, Mass.

## INSTRUCTORS

*Textile Engineering*

George H. Perkins, S.B., chief instructor. Massachusetts Institute of Technology, 1899. Associate member American Society of Mechanical Engineers. Experience: draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood, Greene & Co., Boston, Mass.

- Herbert J. Ball, S. B., instructor in mechanical engineering, efficiency and cost finding. Massachusetts Institute of Technology, 1906. Experience: draftsman, Watertown Arsenal, Watertown, Mass.; Lincoln & Williams Twist Drill Company, Taunton, Mass.
- Ulysses J. Lupien, S. B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.
- David M. Hunting, S. B., instructor in mechanical drawing. Massachusetts Institute of Technology, 1912; Harvard University, 1904.
- Charles H. Jack, instructor in machine-shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.
- Marcus J. Cole, S. B., instructor in mechanical drawing, evenings only. Massachusetts Institute of Technology, 1909. Experience: assistant master mechanic, Bigelow-Hartford Carpet Company, Lowell, Mass.; Hamilton Emery and Corundum Company, Chester, Mass.; Barre Wool Combing Company, South Barre, Mass.; L. B. Dow, consulting engineer, Boston, Mass.

### *Chemistry and Dyeing*

- Louis A. Olney, S. B., M. S., chief instructor. Lehigh University, 1896. Experience, instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.
- Robert R. Sleeper, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday & Sons, Limited, New York City; H. A. Metz & Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- Howard D. Smith, Ph. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor, Brown University and Tufts College; instructor, Beloit College.
- Russell B. Stoddard, A. B., instructor in chemistry. Clark College, 1912.
- Bertrand F. Brann, M. S., instructor in chemistry. Massachusetts Institute of Technology, 1912; University of Maine, 1909. Experience: instructor, Massachusetts Institute of Technology; assistant instructor, University of Maine.
- Warren H. Whitehill, assistant instructor in chemistry. Lowell Textile School, 1912. Experience: chemist, Brewer & Co., Worcester, Mass.; dyeing department, Stirling Mills, Lowell, Mass.
- George O. Richardson, assistant instructor in dyeing. Lowell Textile School, 1916.

### *Textile Design and Weaving*

- Hermann H. Bachmann, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the city of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company and Smith Webbing Company, Pawtucket, R. I.
- Stewart Mackay, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- Joseph Wilmot, instructor in power weaving and warp preparation. Lowell Textile School, 1908. Experience: United States Bunting Company, Lowell, Mass.; Draper Company, Hopedale, Mass.; Crompton & Knowles Loom Works, Worcester, Mass.
- Andrew Younger, instructor in power weaving and warp preparation. Lowell Textile School, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Company, Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woolen Company, Dedham, Mass.; C. A. Root Manufacturing Company, Uxbridge, Mass.

Elizabeth Whitney, instructor in freehand drawing, evenings only. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching.

#### *Cotton Yarns*

Stephen E. Smith, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Lowell Machine Shop, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

Henry K. Dick, instructor in knitting. Experience: Linville Hosiery Factory, Lanark, Scot.

George Goodchild, instructor in cotton yarns, evenings only. Lowell Textile School, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; DeLamar Copper Company, Chrome, N. J.

#### *Woolen and Worsted Yarns*

Edgar H. Barker, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.

John H. Howker, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, Eng.; certificate from city and guilds of London. Experience: Saltaire Mills, Yorkshire, Eng.; Goodall Worsted Company, Sanford, Me.; Arlington Mills, Lawrence, Mass.

John C. Lowe, instructor in woolen yarns. Lowell Textile School, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

#### *Finishing*

Arthur A. Stewart, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Can.; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.

#### *Cultural Course—Languages*

Lester H. Cushing, A. B., Harvard College, 1911. Experience: Lowell Textile School, Lowell, Mass.

#### *Cultural Course—Physical Culture*

Ralph E. Guillow, physical director. International Y. M. C. A. Training School, Springfield, Mass., 1910. Ten years' experience in physical culture in various schools and institutions.

Archibald R. Gardner, M. D., medical adviser. Harvard University, 1902.

The following changes in the instruction staff are noted:—

Warren H. Whitehill appointed assistant instructor in chemistry *vice* Harold W. Leitch, resigned.

George O. Richardson, assistant instructor in dyeing *vice* Elliot B. Plummer, resigned.

Andrew Younger, instructor in power weaving and warp preparation *vice* Albert E. Musard, resigned.

The total number of day pupils this year was 130 against 137 last fiscal year. This is due to the fact that when we were expecting to be authorized to grant degrees, it was hoped that the



legislation would be shaped so as to permit students, who after graduation had achieved responsible positions in the textile industry, and who had had at least five years' experience, to be eligible for a degree without having to give up their employment and spend an additional year at the school; and hoping for this honor 15 of such graduates applied and were registered. They had been carried on our day roster for several years, but actual residence for an additional year has been so strongly insisted upon that we have thought it best to drop them. Eliminating these graduates from our attendance roster shows an increase of 8 resident day pupils.

The number of evening pupils this year was 733 against 656 the previous year, an increase of 77, making the total day and evening increase 85, or about 11 per cent.

Eighty-two cities and towns are represented on our roster.

See Appendix for residence and previous education of students.

#### POSITIONS HELD BY DAY GRADUATES

Directors of textile schools .....	2
Teachers .....	12
Mill vice-presidents .....	2
Mill treasurers and agents .....	11
Mill superintendents .....	19
Mill assistant superintendents .....	11
Mill foremen of departments .....	10
Assistant to superintendents .....	1
Mill auditors and accountants .....	3
Mill clerks .....	2
Second hands .....	6
Managers .....	20
Textile designers and fabric experts .....	19
Purchasing agents .....	1
In commission houses .....	4
Salesmen .....	9
Chemists, dyers and chemical salesmen .....	58
In national government employ .....	7
In State employ .....	1
Textile manufacturing, unassigned .....	14
Industrial engineering .....	14
Mill engineering .....	11
Civil engineering .....	1
Electricians .....	2
Paymasters .....	1
Trade journalists .....	3
In business, textile distributing or incidental thereto .....	10
Other business .....	17
Students .....	2
Married women .....	3
Employment not known .....	21
Not employed .....	2
Deceased .....	7
Total .....	306

## METHODS OF INSTRUCTION

Instruction is first given in the principles of the sciences applicable to the textile and textile machinery industries, followed by instruction in the practical art,—the application of such sciences to the processes and machinery of manufacture.

Day instruction offers five courses of three or four years, as the student may elect, namely, cotton manufacturing, wool manufacturing, textile design,—including weaving and finishing,—chemistry and dyeing, and textile engineering.

All freshmen in the day classes during the first half year receive the same general instruction. At the beginning of the second half they are expected to choose one of the regular day courses. Each course, however, in addition to the specialty indicated by its name, includes some features of every other course, as such instruction, it is found, adds to the efficiency of the pupil by giving added breadth in the line he has chosen.

While there are several regular courses offered they may be generally grouped in three grand divisions, namely, textile engineering, chemistry and dyeing, and textile design.

Textile engineering includes the mechanism of all machinery used in all departments of the school, and also machine-shop practice; instruction in the generation, transmission and application of power, whether steam, hydraulic, electrical or gas. In boiler and engine testing, for which a very complete and modern laboratory is provided, the pupils are called upon to make, or are afforded opportunities for conducting, continuous twenty-four hour tests, boiler and plant tests, etc. This division also includes mill construction of all modern types, viz., steel, concrete masonry, brick and wood, and combinations of both, involving the laying out of plants, selection and management of machinery, shafting, etc.; the use of the transit in surveying; physics as involved in the testing of fibres, yarns and fabrics; mechanical drawing; and the plans for and the construction of equipment. The pupil is first thoroughly grounded in the principles of mechanical, electrical and hydraulic engineering before attempting the more advanced and specialized problems. The higher mathematics form an important part of the work of this department. Here the plans for the school buildings are prepared, and all construction superintended during the summer vacation by the engineers and pupils who may remain for practical experience in this line of work.

Chemistry and dyeing involves a thorough course in chemistry, followed by an applied course, first in the laboratories, and finally on commercial vats, presses, kiers, dryers, etc., in dealing with raw stock, yarns and fabrics. A special and growing branch is the making of dyes from minerals, vegetables, oils, etc. A special laboratory is equipped for testing coal and oil.

Textile design includes, first, instruction in color, conventionalizing of nature forms, historic ornament, etc., fundamental to all branches of decorative art; second, in the application thereof to textiles. Included under this head is all fabric weaving and finishing.

Incidental to these general divisions is instruction in English, German, French and physical culture, to which it is desired to add Spanish and Portuguese to meet a demand from textile commission and selling houses in cultivating South American markets.

For evening instruction the day courses are subdivided into sixteen courses. These courses are arranged to cover substantially the same subject-matter as the day courses, but planned to meet the demand of those who wish instruction in special branches and who do not necessarily wish to pursue as complete a course as do those who attend the day classes. If an evening student wishes to cover the same subjects as are offered in the day classes he may do so, and can attain a diploma by satisfactorily passing the necessary examination.

Unlike most schools the same instructors serve day and evening, thus insuring to the evening pupils from the mills and shops the same able and thorough instruction as the day pupils. The working hours are substantially mill hours or twice the number required of instructors at high schools, academies and colleges.

It has for some years been growing more and more evident that our instructors and pupils were being overworked, and were not given sufficient time in a three-year course to deal with some advanced specialties. A postgraduate course was established to relieve the situation, for which has been substituted a regular four-year course with the offer of degrees, as recommended by the State Board of Education, in textile engineering (B.T.E.) and textile dyeing (B.T.D.), the school thus passing from the technical to the technological class as originally intended. More time will thus be given to present features of the curriculum and advanced work, to which are added scientific mill management, cost finding, mill accounting, general corporation organization,

commercial law and usage, patent laws and practice, principles of banking, etc., useful and essential to our graduates as they advance to positions of responsibility in the textile industry.

Most of our day pupils matriculate directly from the high schools or academies. So thorough is their instruction that they graduate directly into employment in the industry or kindred lines, and as they rapidly advance to the higher responsibilities they need instruction that the school has lacked time to impart. Hence, in addition to the technique of the industry is now included instruction incidental but essential to the positions they occupy or aspire to. At some technical schools and colleges it is sought to meet this need by recommending prescribed courses in reading after graduation; but this, being optional with the graduate, may or may not be given attention. By limiting these subjects to essentials and making them obligatory it is thought the pupils will more certainly be benefited.

The scientific method in mill management—with special reference to “efficiency or production engineering” as presented by Taylor, Gantt, Gilbreth, Emerson, Gunn, Richards, Cooke, Patterson and others, mostly of the eminent Society of Mechanical Engineers—and cost finding are leading features of the fourth year now added to the three-year courses in chemistry and textile engineering, competent instructors having been secured.

The published works of these engineers, or papers specially prepared by them for this school, have been furnished the fourth-year pupils; and when they are grounded in the principles of this scientific method of management they are instructed in the methods of applying them to textile processes, and are then required to pass an examination therein.

Mindful that pragmatism, as expounded by the late Professor James of Harvard, may, from the standpoint of economics, be summed up in this, that a theory is valuable only as it is found useful in application, or, more homely expressed, “the proof of the pudding is in the eating,” approved efficiency literature is sent out to our graduates, already filling a great variety of positions, with the request that they use their eyes and brains and give us the benefit of their criticism and the problems they meet with from their various standpoints of supervision in practical manufacture.

Nearly all of our graduates go to positions that make it most important that they be fully instructed as to the latest improved methods of dealing with labor; and thoroughly trained as they



are at the school in the make-up, installation and operation of machinery, they should be exceptionally capable of testing the various efficiency systems proposed. Papers already received from those in employment and from their employers indicate that "efficiency or production engineering" has a useful place in the textile industry, and will, when fully applied to all departments of a mill, result in as great benefits to employees and employers alike as has resulted in its application at the shops.

Eminent efficiency engineers are gradually being called to textile mills, and there is a steadily growing demand by them for our thoroughly trained graduates to fill the various staff and division positions required to carry out their instructions as they install features of scientific efficiency methods of dealing with labor. From such staffs it is expected will eventually come an able body from which to draw managers of production. The number of graduates called for by efficiency engineers is steadily increasing. It is gratifying to notice that these calls are generally from the largest and most successful mills.

The rapid application of electricity to textile machinery and processes calls for an extension of our electrical equipment, and the necessary equipment is being installed. Fiber, yarn and fabric testing, which are such prominent features of foreign schools, have already been provided for. A complete equipment of cotton finishing machinery is now in place. These additions to the plant have not yet involved any addition to our corps of instructors.

#### CORPORATION SUPERVISION

An annual meeting is held in January for the election of officers, reception of annual reports and the transaction of such other business as may be proposed, not committed to the Board of Directors. Monthly meetings of the trustees at the school, sitting as a Board of Directors, are provided for. They appoint such agents, school officers and teachers as they find necessary, prescribe their duties and fix their compensation. The president (in the absence the vice-president) presides at all the meetings of the corporation and Board of Directors, and performs such other duties and exercises such other authority as the corporation or Board of Directors may from time to time devolve on him. The treasurer is charged with the general care of the pecuniary affairs and concerns of the corporation, he to receive all revenues and make all authorized disbursements. He is required to report



receipts and expenditures and financial conditions quarterly to the Board of Directors, and annually to the corporation. He is also to execute all contracts made by express authority of the corporation or Board of Directors and approved by the president. The president, clerk, treasurer and two elected trustees compose a finance committee which passes upon all orders for expenditures and inspects all bills before payment. No expenditure is authorized or liability incurred in excess of money available to meet it, except by vote of the Board of Directors at a meeting in the call for which due notice of the nature of such proposed expenditure or liability is given. The clerk is required to keep a record of all regular and special meetings of the corporation and Board of Directors, notify all members of such meetings seven days in advance, and perform such other duties as the corporation or Board of Directors may require of him. He is a resident trustee, devoting his time to development work.

In addition to the finance committee there are general committees of ways and means, building and legislative, and lectures. There is also a subcommittee for each department of the school, composed, as far as is practicable, of trustees identified in manufacturing with the specific branch of industry to which their department relates. They are to make recommendations to the Board of Directors as to the needs, etc., of their respective departments, and especially as to the new equipment, floor space, etc., and to perform such other duties as the directors may require of them.

The principal of the school is charged with its conduct, and is directly accountable to the Board of Directors, making monthly reports thereto and such recommendations and special reports as to efficiency, discipline, etc., as in his judgment are required.

#### TOTAL RECEIPTS OF THE LOWELL TEXTILE SCHOOL FROM ORGANIZATION TO JUNE 30, 1915.

FOR THE PLANT, INCLUDING LAND, BUILDINGS AND EQUIPMENT	
From the Commonwealth .....	\$303,331.66
From other sources—manufacturers and others .....	398,866.97
Excess of outside contributions .....	<u>\$ 95,535.31</u>
FOR MAINTENANCE	
From the Commonwealth .....	\$540,500.00
From city of Lowell .....	\$164,604.00
From earnings (pupils' fees) .....	<u>218,904.31</u>
	383,508.31
• Excess of Commonwealth Contributions .....	<u>\$156,091.60</u>

# LOWELL TEXTILE SCHOOL

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## AVERAGE CONTRIBUTIONS FOR ALL PURPOSES

From Commonwealth brought down:—

For plant .....	\$303,331.66
For maintenance .....	540,500.00

Total Commonwealth contribution ..... \$843,831.66

From other sources:—

For plant .....	\$398,866.97
For maintenance .....	383,508.31

782,375.28

Excess of contributions by Commonwealth for all  
purposes ..... \$ 61,456.38

## APPROPRIATIONS FOR 1916-17.

For many years we have had to annually ask, in addition to grants for maintenance, a goodly sum for new equipment, this item amounting to \$15,000 for each of the two past years. We are happy to say that we are able to omit this annual item for the coming year, as the growth of our roster indicates that the increased revenues from tuition fees will probably meet the annual demand for new equipment.

Our petition filed for the coming school year beginning July 1, 1916, calls for the following grants:—

For maintenance, the same amount as for the current year .....	\$50,000.00
For grading and enclosing grounds .....	1,500.00
For machine shop .....	20,000.00
For instruction in Spanish and Portuguese .....	2,000.00
Total for coming year .....	\$73,500.00
For deficiency last year per treasurer's statement herewith .....	1,232.26
	<u>\$74,732.26</u>

A statement in detail of these needs will be found in full in our report to the Auditor of Accounts and in our petition enclosing a draft of a resolve.

Respectfully submitted,

TRUSTEES OF LOWELL TEXTILE SCHOOL,

A. G. CUMNOCK,  
*President.*

JAMES T. SMITH,  
*Corporation Clerk.*

LOWELL, MASS., Jan. 26, 1916.

## APPENDIX

## RESIDENCE OF DAY STUDENTS

Andover, Mass. ....	3	North Andover, Mass. ....	1
Beverly, Mass. ....	2	Norwood, Mass. ....	1
Billerica, Mass. ....	1	Roxbury, Mass. ....	2
Boston, Mass. ....	3	Somerville, Mass. ....	1
Cambridge, Mass. ....	4	Stoneham, Mass. ....	1
Charlton City, Mass. ....	1	Taunton, Mass. ....	1
Cochituate, Mass. ....	1	Uxbridge, Mass. ....	1
Concord Junction, Mass. ....	1	Waltham, Mass. ....	1
Dorchester, Mass. ....	2	Ware, Mass. ....	1
Dracut, Mass. ....	1	Wayland, Mass. ....	1
Essex, Mass. ....	1	Webster, Mass. ....	1
Everett, Mass. ....	2	West Chelmsford, Mass. ....	1
Fitchburg, Mass. ....	1	Winchester, Mass. ....	5
Franklin, Mass. ....	1	Winthrop, Mass. ....	1
Gloucester, Mass. ....	1	Woburn, Mass. ....	2
Great Barrington, Mass. ....	1	Worcester, Mass. ....	1
Greenwood, Mass. ....	1	Illinois .....	1
Groton, Mass. ....	3	Maine .....	2
Haverhill, Mass. ....	3	New Hampshire .....	6
Hingham, Mass. ....	1	New Jersey .....	1
Hudson, Mass. ....	1	New York .....	5
Lawrence, Mass. ....	6	Rhode Island .....	1
Lowell, Mass. ....	41	Virginio .....	1
Malden, Mass. ....	2	Brazil .....	1
Melrose, Mass. ....	1	China .....	1
Newton Upper Falls, Mass. ....	1	Japan .....	1
North Adams, Mass. ....	1		
North Billerica, Mass. ....	1	Total .....	130

## PREVIOUS EDUCATION OF DAY STUDENTS

High school or preparatory school .....	112
College .....	15
Grammar school .....	3
Total .....	130

## RESIDENCE OF EVENING STUDENTS

Andover, Mass. ....	21	Dracut, Mass. ....	6
Ayer, Mass. ....	1	Forge Village, Mass. ....	2
Ballardvale, Mass. ....	3	Graniteville, Mass. ....	2
Boston, Mass. ....	1	Lawrence, Mass. ....	145
Chelsea, Mass. ....	1	Lowell, Mass. ....	465
Chelmsford, Mass. ....	2	Malden, Mass. ....	1

RESIDENCE OF EVENING STUDENTS—*Concluded*

Melrose, Mass. ....	1	Waban, Mass. ....	1
Methuen, Mass. ....	35	Wamesit, Mass. ....	1
North Andover, Mass. ....	13	Winchester, Mass. ....	3
North Billerica, Mass. ....	5	Winthrop, Mass. ....	1
North Chelmsford, Mass. ....	14	Woburn, Mass. ....	1
Roslindale, Mass. ....	1	Nashua, N. H. ....	1
Roxbury, Mass. ....	1	Salem, N. H. ....	1
Somerville, Mass. ....	2		
Tewksbury, Mass. ....	2	Total .....	733

## PREVIOUS EDUCATION, EVENING STUDENTS

High school (day) .....	218
High school (evening) .....	64
Grammar school .....	374
College .....	23
Business college .....	18
Industrial school .....	31
International Correspondence School .....	1
Textile school .....	1
Technical school .....	2
State normal school .....	1
Total .....	733

## OCCUPATION OF EVENING STUDENTS

Apprentices .....	28	Electricians .....	7
Assistant superintendents .....	3	Elevator boys .....	1
Bakers .....	1	Engineers .....	4
Blacksmiths .....	2	Expressmen .....	1
Bleachers .....	1	Firemen .....	3
Bobbin boys .....	4	Fixers .....	19
Boiler makers .....	1	Gas meter readers .....	1
Bookkeepers .....	1	Harness makers .....	1
Boxmakers .....	1	Hatters .....	1
Carbonizers .....	1	Helpers .....	25
Caretakers .....	1	Housekeepers .....	1
Carpenters .....	10	Knitters .....	4
Chauffeurs .....	9	Laborers .....	3
Chemists .....	11	Leather workers .....	2
Clerks .....	27	Loom fixers .....	10
Cloth examiners .....	10	Loopers .....	7
Cloth finishers .....	6	Lumber surveyors .....	1
Color mixers .....	5	Machine erectors .....	1
Compositors .....	1	Machinists .....	61
Cost clerks .....	6	Managers .....	5
Cutters .....	1	Mechanics .....	10
Decorators .....	1	Mill clerks .....	54
Designers .....	4	Mill employees .....	118
Draftsmen .....	13	Millwrights .....	2
Dressmakers .....	1	Newsboys .....	1
Dyers .....	16	Office boys .....	6

OCCUPATION OF EVENING STUDENTS—*Concluded*

Office clerks .....	7	Students .....	41
Oilers .....	3	Tailors .....	1
Overseers .....	12	Teachers .....	1
Painters .....	6	Teamsters .....	1
Pattern dressers .....	1	Telephone assemblers .....	1
Pattern makers .....	3	Testers .....	1
Paymasters .....	3	Timekeepers .....	2
Perchers .....	5	Tinsmiths .....	1
Plasterers .....	1	Third hands .....	3
Platers .....	1	Tool makers .....	1
Plumbers .....	1	Traveling salesmen .....	4
Printers .....	2	Unemployed .....	17
Salesmen .....	4	Weavers .....	17
Second hands .....	39	Weighers .....	4
Sheet metal workers .....	2	Wool sorters .....	2
Shippers .....	5	Yarn boys .....	6
Shoe workers .....	15		
Steamfitters .....	3	Total .....	733
Stenographers .....	3		



TRUSTEES OF THE LOWELL TEXTILE SCHOOL, 1914-15.

(Incorporated, 1895.)

HONORARY TRUSTEES

FREDERICK FANNING AYER, Esq., New York City.

CHARLES H. HUTCHINS, President, Crompton & Knowles Loom Works

THE CORPORATION OFFICERS

A. G. CUMNOCK, *President*

JAMES T. SMITH, *Clerk*

JOHN JACOB ROGERS, *Vice-President*

A. G. POLLARD, *Treasurer*

TRUSTEES

On the Part of the Commonwealth of Massachusetts

Ex officiis

HIS HONOR GRAFTON D. CUSHING,  
Lieutenant Governor.

DR. DAVID SNEDDEN,  
Commissioner of Education.

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916.  
Treasurer, Boott Mills.

JOHN T. DONEHUE, Lowell, 1918.

On the Part of the City of Lowell

Ex officiis

HON. DENNIS J. MURPHY,  
Mayor of Lowell.

HUGH J. MOLLOY,  
Superintendent of Public Schools.

JAMES H. CARMICHAEL,  
President, Municipal Council.

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

PERMANENT TRUSTEES

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

FREDERIC S. CLARK, Boston and North Billerica, Treasurer, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Resident Trustee.

WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

FRANK E. DUNBAR, Lowell, Attorney at Law, and President, Appleton Company, Boston corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith & Dove Manufacturing Company, class of 1900.

WILLIAM E. HALL, Lowell, Treasurer, Shaw Stocking Company.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston Corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.  
FRANKLIN W. HOBBS, Brookline, President, Arlington Mills, Boston corporation, mills at Lawrence.

WILLIAM A. MITCHELL, Lowell Agent, Massachusetts Cotton Mills, Boston corporation, mills at Lowell.

EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston corporation, mills at Lowell.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

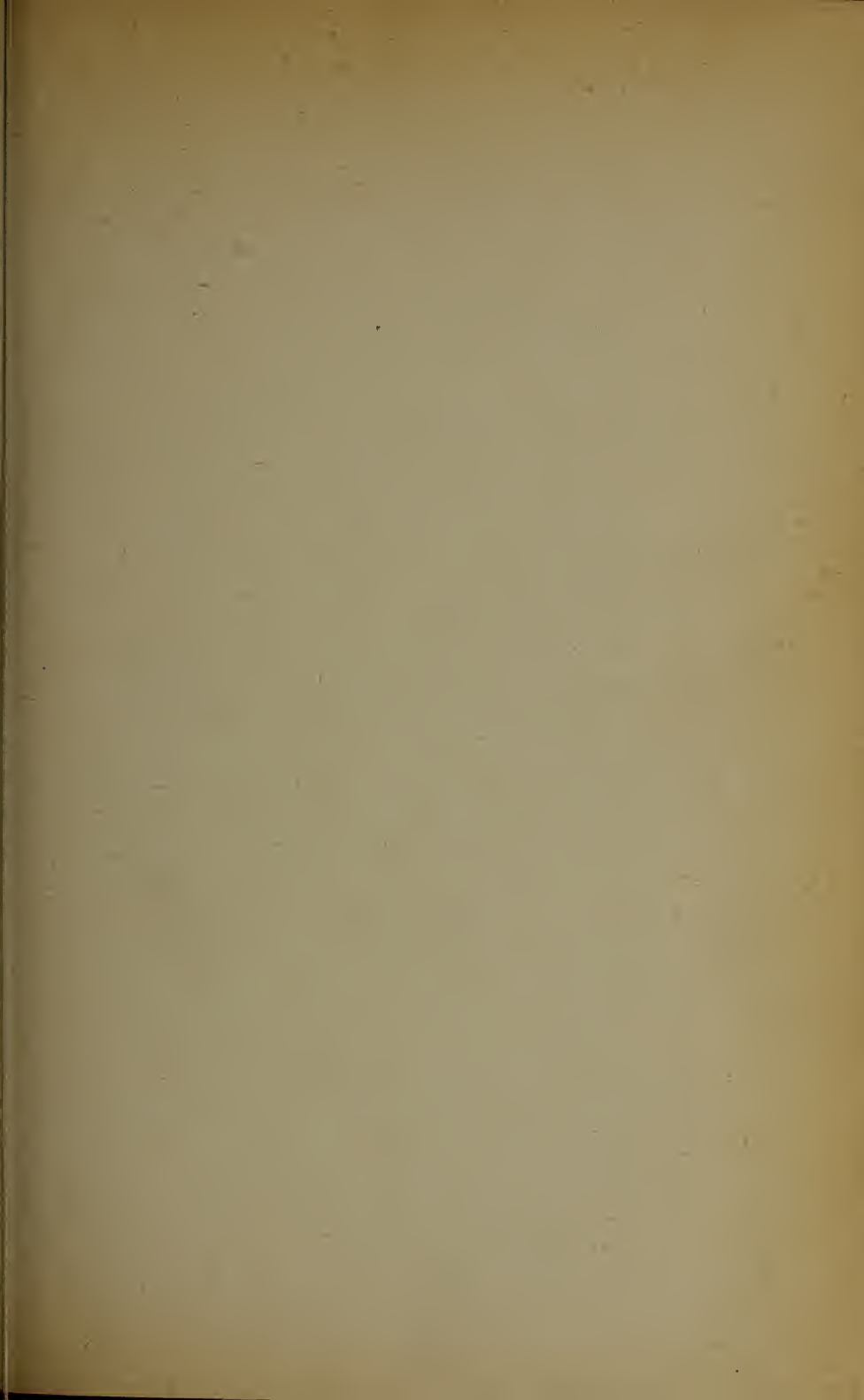
#### **Additional Trustees elected by Alumni under Act of 1905**

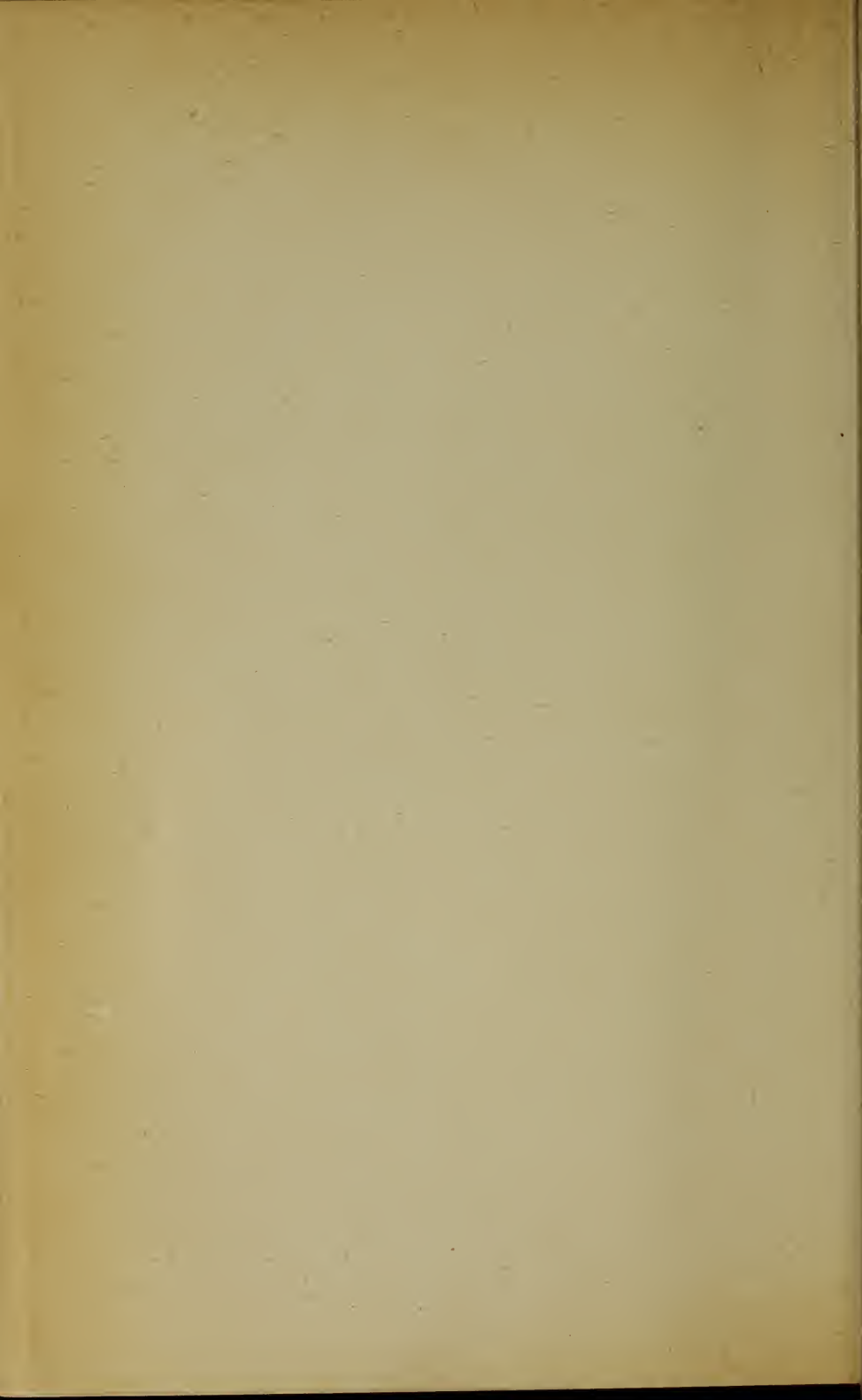
For term ending June 30, 1915: ——— ———

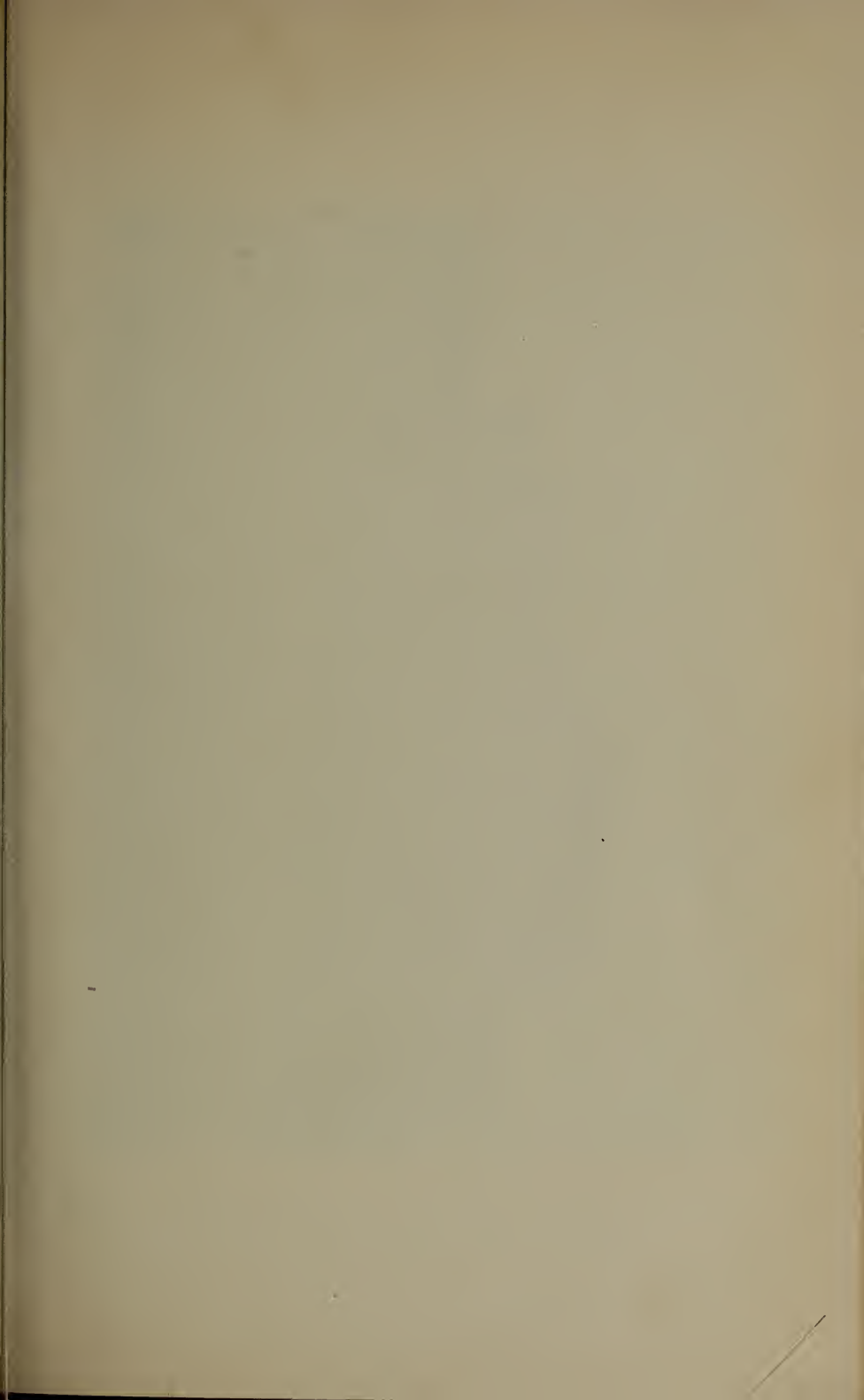
For term ending June 30, 1916: DEXTER STEVENS, class of 1904, Superintendent, Esmond Mills, Esmond, R. I.

For term ending June 30, 1917: ARTHUR C. VARNUM, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.

For term ending June 30, 1918: ——— ———











SOUTHWICK HALL

COLONIAL AVENUE BUILDING AND  
FALMOUTH STREET BUILDING

SERIES 19. NO. 4

*May, 1916*

BULLETIN  
OF THE  
Lowell Textile School

LOWELL, MASS.

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*Issued Quarterly*

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1916 - 1917

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Entered August 26, 1902, at Lowell, Mass., as second class matter,  
under Act of Congress of July 16, 1894.

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*Moody Street and Colonial Avenue*

# CALENDAR

FOR 1916

JANUARY						
S	M	T	W	T	F	S
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FOR 1917

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# CALENDAR

## January—June, 1916

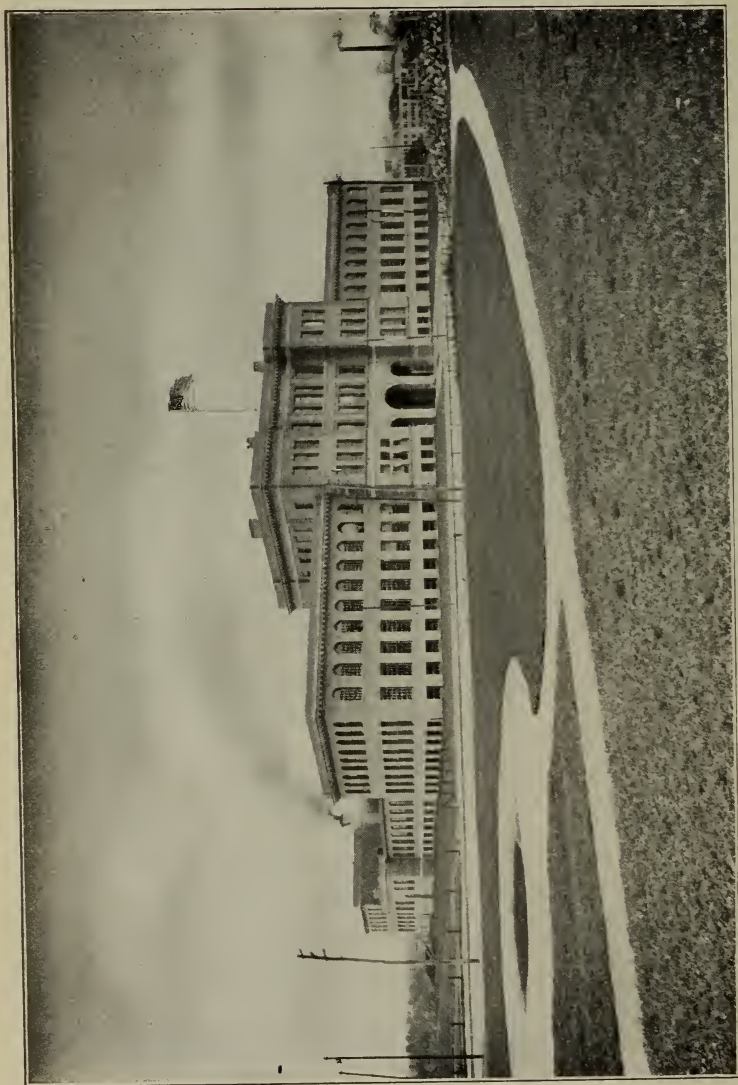
January 24, Mon.	Semi-annual examinations begin.
February 7, Mon.	SECOND TERM begins.
February 22, Tues.	Washington's Birthday—Holiday.
March 11, Sat.	End of first five-week period of second term.
April 12, Wed.	Certificates awarded to Evening Graduates.
April 15, Sat.	End of second five-week period of second term.
April 15, Sat. to April 19, Wed. inclusive	Recess.
May 22, Mon.	Final examinations begin.
May 30, Tues.	Memorial Day—Holiday.
June 2, Fri.	Diplomas awarded to Day Graduates.
June 13-14, Tues and Wed., 9 A. M.	First entrance examinations.

## September, 1916—June, 1917

September 5 and 6, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 18, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 21, Thurs.—7 P. M.	Entrance examinations for evening students begin. They will be held on Thursday evenings until opening of classes.
September 25, Mon.	DAY SCHOOL YEAR begins.
October 2, Mon.	Evening school year begins.
October 12, Thurs.	Columbus Day—Holiday.
October 28, Sat.	End of first five-week period of first term.
November 29, Wed. to December 2, Sat. inclusive	Thanksgiving Recess.
December 2, Sat.	End of second five-week period of first term.
December 23, Sat. to January 3, Wed. inclusive	Christmas Recess.
January 22, Mon.	Semi-annual examinations begin.
February 5, Mon.	SECOND TERM begins.
February 22, Thurs.	Washington's Birthday—Holiday.
February 26, Mon.	Annual examinations for evening classes commence.
March 10, Sat.	End of first five-week period of second term.
April 11, Wed.	Certificates awarded to Evening Graduates.
April 14, Sat.	End of second five-week period of second term.
April 16, Mon. to April 19, Thurs. inclusive	Recess.
May 21, Mon.	Final examinations begin.
May 30, Wed.	Memorial Day—Holiday.
June 1, Fri.	Diplomas awarded to Day Graduates.
June 12, and 13, Tues. and Wed. 9 A. M.	First entrance examinations.

## September, 1917—January, 1918

September 4 and 5, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 17, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 20, Thurs. 7 P. M.	Entrance examinations for evening students begin. They will be held on Thursday evenings until opening of classes.
September 24, Mon.	DAY SCHOOL YEAR begins.
October 1, Mon.	Evening school year begins.
October 12, Fri.	Holiday in observance of Columbus Day.
October 27, Sat.	End of first five-week period of first term.
November 28, Wed. to December 1, Sat. inclusive	Thanksgiving Recess.
December 1, Sat.	End of second five-week period of first term.
December 24, Mon. to January 2, Wed. inclusive	Christmas Recess.



SOUTHWICK HALL

KITSON HALL AND CAMPUS



# Trustees of the Lowell Textile School

(Incorporated 1895)

## Honorary Trustees

FREDERICK FANNING AYER,  
New York City

CHARLES H. HUTCHINS

President, Crompton and Knowles Loom Works, Worcester, Mass.

## The Corporation

### Officers, 1915

ALEXANDER G. CUMNOCK, President

JAMES T. SMITH, Clerk

JOHN JACOB ROGERS, Vice-President

ARTHUR G. POLLARD, Treasurer

### Trustees

On the part of the Commonwealth of Massachusetts

#### *Ex Officiis*

HIS HONOR CALVIN COOLIDGE  
Lieutenant Governor

DR. DAVID SNEDDEN  
Commissioner of Education

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916  
Treasurer, Boott Mills

JOHN T. DONEHUE, Lowell, 1918

On the part of the City of Lowell

#### *Ex Officiis*

HON. JAMES E. O'DONNELL  
Mayor of Lowell

HUGH J. MOLLOY  
Superintendent of Public Schools

WILLIAM W. DUNCAN  
President Municipal Council

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

### Permanent Trustees

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EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

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ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.

### Additional Trustees Elected by Alumni Under Act of 1905

For term ending June 30, 1916: Dexter Stevens, class of 1904, Superintendent, Esmond Mills, Esmond, R. I.

For term ending June 30, 1917: Arthur C. Varnum, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.

For term ending June 30, 1918: Edward M. Abbott, class of 1904, Vice-President and Agent, Abbott Worsted Co., Graniteville, Mass.

For term ending June 30, 1919: Edmund A. Lucey, class of 1904, Industrial Engineer, H. L. Gantt, New York City.



GENERAL VIEW OF SCHOOL, MERRIMACK RIVER

## GENERAL COMMITTEES

### FINANCE

ALEXANDER G. CUMNOCK, Chairman

ARTHUR G. POLLARD  
CHARLES F. YOUNG

FREDERICK A. FLATHER  
JAMES T. SMITH

### BUILDING AND LEGISLATIVE

ALEXANDER G. CUMNOCK, Chairman

FREDERICK A. FLATHER  
FREDERIC S. CLARK  
HENRY A. BODWELL

ARTHUR G. POLLARD  
WILLIAM E. HALL  
JOHN J. ROGERS

JAMES T. SMITH  
ARTHUR C. VARNUM

### WAYS AND MEANS

JAMES T. SMITH, Chairman  
FREDERIC S. CLARK

JOHN T. DONEHUE  
WALTER E. PARKER

ROYAL P. WHITE

### LECTURES

JAMES T. SMITH, Chairman  
JOHN J. ROGERS

HENRY A. BODWELL  
ARTHUR C. VARNUM

FREDERIC S. CLARK

### DEPARTMENT COMMITTEES

#### *Cotton Yarns and Knitting*

WILLIAM E. HALL, Chairman  
T. ELLIS RAMSDELL

EVERETT H. WALKER  
DEXTER STEVENS

#### *Woolen and Worsted Yarns*

WALTER E. PARKER, Chairman  
EUGENE S. HYLAN

GEORGE E. KUNHARDT  
ARTHUR C. VARNUM

#### *Chemistry and Dyeing*

WILLIAM R. MOORHOUSE, Chairman  
CHARLES F. YOUNG

FREDERIC S. CLARK  
WILLIAM A. MITCHELL

#### *Decorative Art*

JAMES T. SMITH, Chairman

FREDERICK LAWTON

#### *Designing, Weaving and Finishing*

FREDERIC S. CLARK, Chairman  
GEORGE E. KUNHARDT

ROYAL P. WHITE  
ARTHUR G. POLLARD

#### *Mechanical and Electrical Engineering*

HENRY A. BODWELL, Chairman

JAMES T. SMITH

FREDERICK A. FLATHER

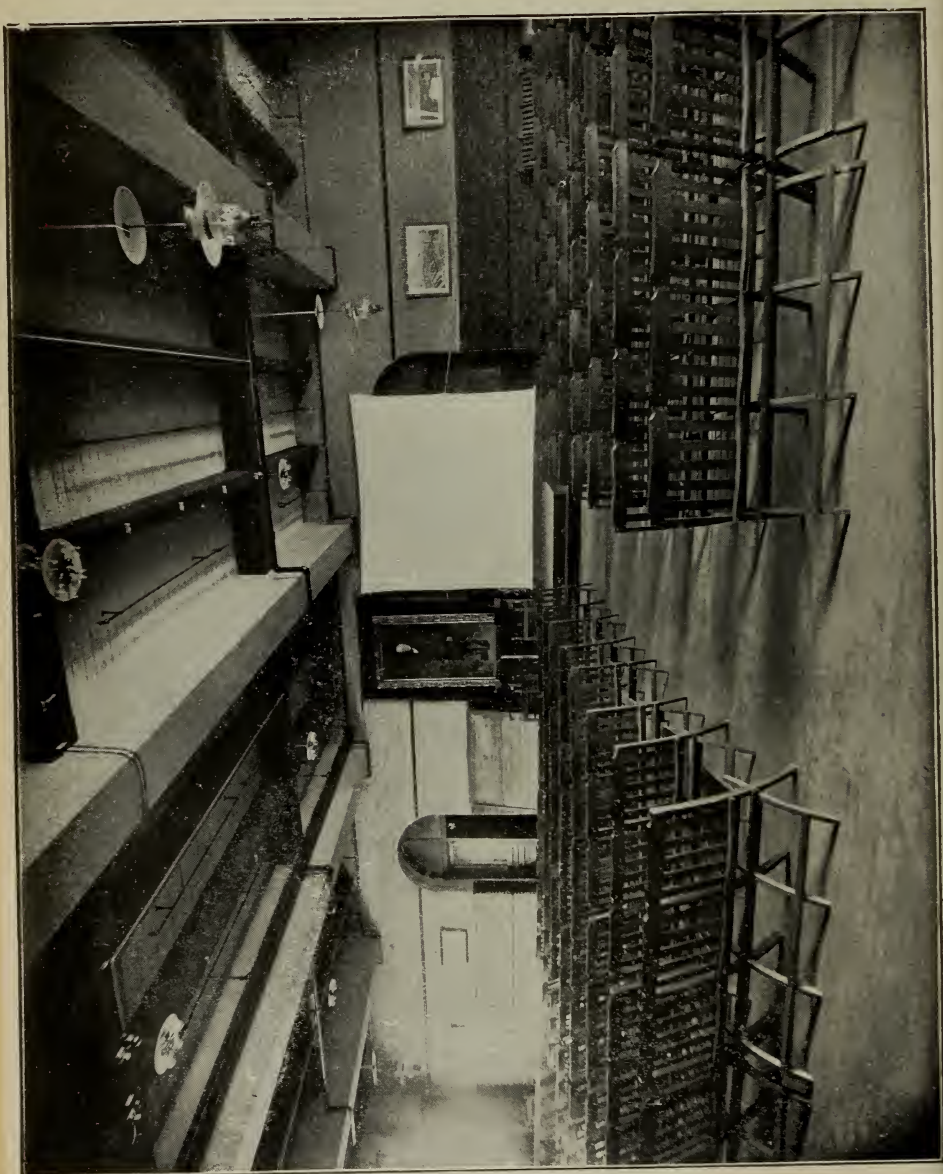
#### *Athletics and Grounds*

JAMES T. SMITH, Chairman

WILLIAM R. MOORHOUSE

ROYAL P. WHITE

EDWARD M. ABBOTT





## OFFICERS OF ADMINISTRATION AND INSTRUCTION

### ADMINISTRATION

CHARLES H. EAMES, S. B., Principal of the School	
WALTER B. HOLT, Bursar	FLORENCE M. LANCEY, Librarian
STELLA F. MORRILL, Registrar	RENA J. LANDERS, Secretary

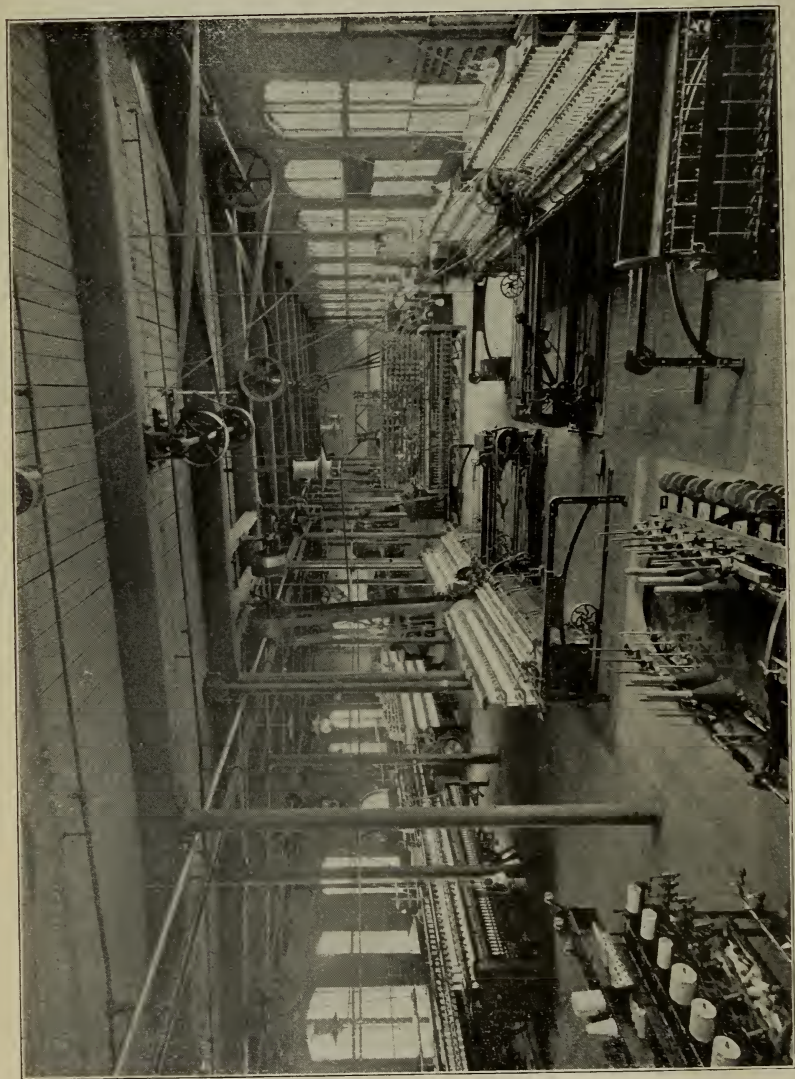
### CHIEFS OF DEPARTMENTS

LOUIS A. OLNEY, S. B., M. S.,	Professor of Chemistry; in charge of Department of Chemistry and Dyeing
EDGAR H. BARKER,	In charge of Department of Woolen and Worsted Yarns
GEORGE H. PERKINS, S. B.,	In charge of Department of Textile Engineering
ARTHUR A. STEWART,	In charge of Department of Finishing
STEPHEN E. SMITH,	In charge of Department of Cotton Yarns and Knitting
HERMANN H. BACHMANN,	In charge of Department of Textile Design and Power Weaving
LESTER H. CUSHING, A. B.,	In charge of Department of Languages, History and Economics

### INSTRUCTORS

JOSEPH WILMOT,	Instructor in Jacquard Weaving and Warp Preparation
JOHN N. HOWKER,	Instructor in Wool Sorting and Scouring
STEWART MACKAY,	Instructor in Textile Design and Cloth Analysis.
ROBERT R. SLEEPER,	Instructor in Dyeing
HERBERT J. BALL, S. B.,	Instructor in Mechanical and Efficiency Engineering and Accounting
ULYSSES J. LUPIN, S. B.,	Instructor in Mathematics, Physics and Electrical Engineering
HOWARD D. SMITH, PH. D.,	Instructor in General Chemistry and Qualitative Analysis





COTTON YARN DEPARTMENT

## INSTRUCTORS—CONTINUED

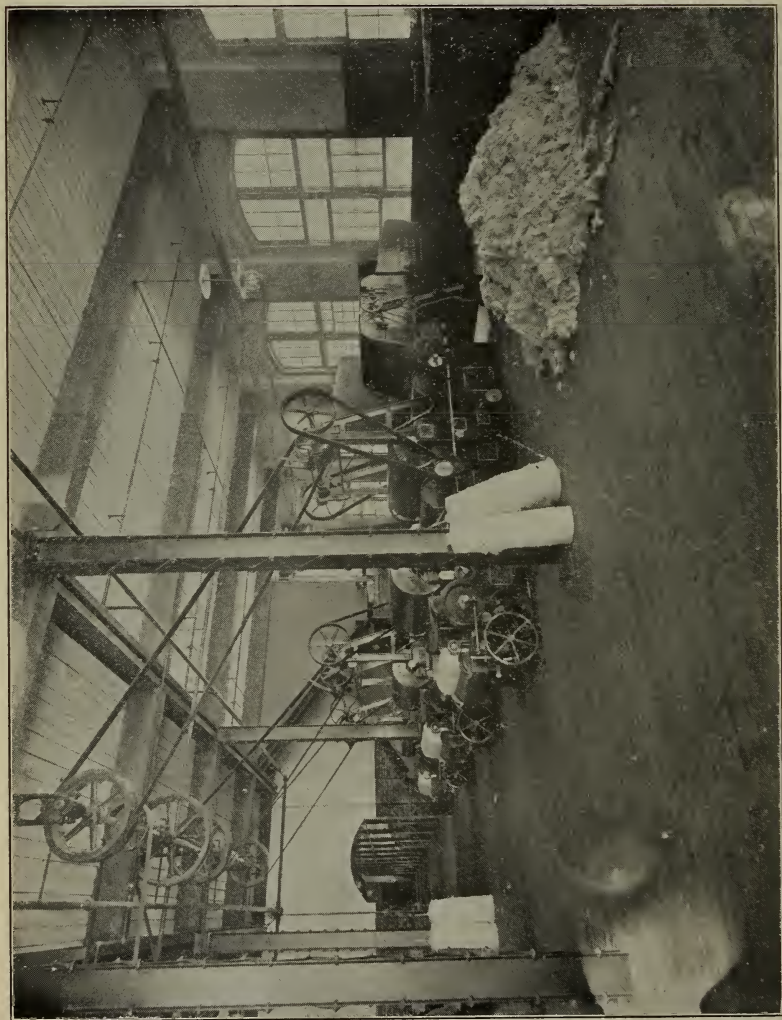
- RUSSELL B. STODDARD, A. B.,  
Instructor in Organic Chemistry
- JOHN C. LOWE,  
Instructor in Woolen and Worsted Yarns
- CHARLES H. JACK,  
Instructor in Machine Shop Practice
- BERTRAND F. BRANN, S. B., M. S.,  
Instructor in Quantitative Analysis
- ANDREW YOUNGER,  
Instructor in Weaving
- ALEXANDER D. DAVIS, B. T. E.,  
Instructor in Mechanical Drawing and Mechanism
- LOUIS C. PLAYDON,  
Instructor in Cotton Yarns
- C. LEONARD GLENN,  
Instructor in Finishing
- GEORGE O. RICHARDSON,  
Assistant Instructor in Chemistry
- RALPH E. GUILLOW,  
Instructor in Physical Culture
- E. ELIZABETH WHITNEY,  
Evening Instructor in Freehand Drawing
- GEORGE GOODCHILD,  
Evening Instructor in Cotton Yarns
- EDGAR L. WOODWARD, S. B.,  
Evening Instructor in Mechanical Drawing
- EDITH C. MERCHANT,  
Evening Instructor in Freehand Drawing
- ARCHIBALD R. GARDNER, M. D.,  
Medical Adviser
- CHARLES L. HOWARTH, Student Assistant in Dyeing.
- JAMES A. IRVINE, Student Assistant in Engineering
- HOMER C. RIGGS, Student Assistant in Engineering
- IVAN O. HARLOW, Student Assistant in Chemistry
- WALTER W. POWERS, Student Assistant in Chemistry

## FACULTY

Principal and Chiefs of Departments

## LECTURERS FOR THE CURRENT YEAR

- GARDNER W. PEARSON, Attorney-at-Law  
Patent Law
- MR. L. S. WATSON,  
"Patriotism"
- MR. M. J. DRUBITT, of the Emerson Institute, N. Y.,  
"Efficiency"
- MR. WILLIAM W. CROSBY, S. B., Consulting Engineer,  
"Building Construction"
- MR. GEORGE S. LAWLER, S. B., Factory Mutual Insurance Co.,



PICKER ROOM—COTTON YARN DEPARTMENT



## The Lowell Textile School

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The Lowell Textile School was established, and is managed, by the Trustees of the Lowell Textile School of Lowell, Massachusetts, "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry," as set forth in the act of incorporation.

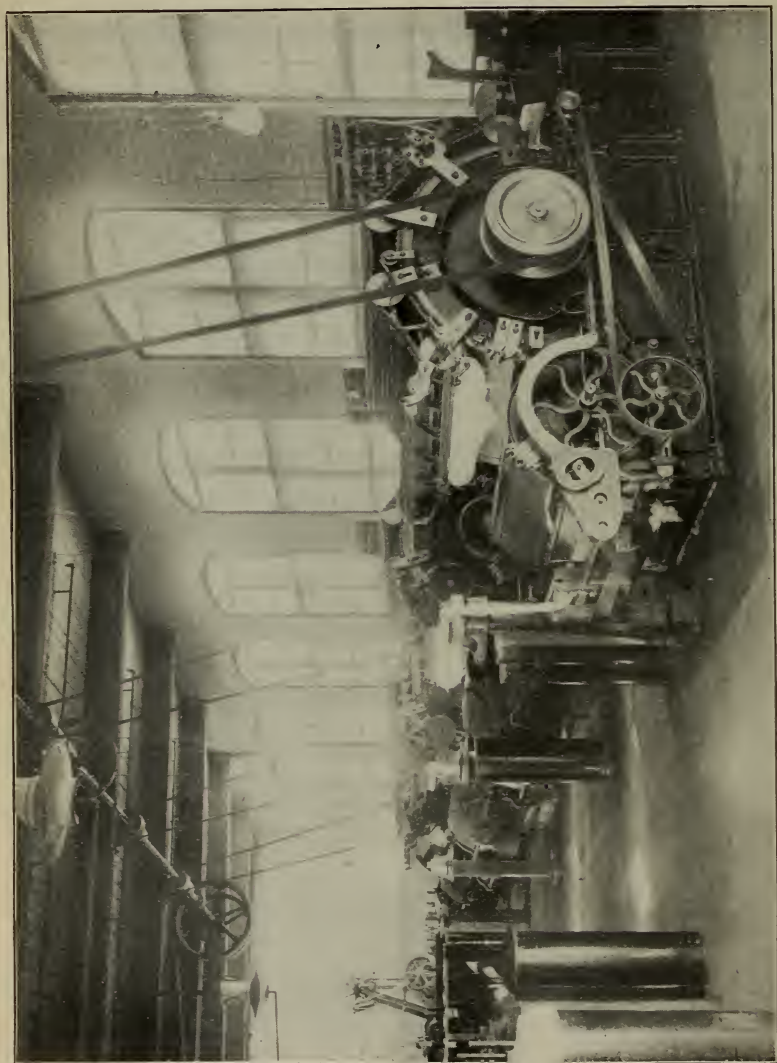
The movement for the establishment of the School dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

Not only did the normal progress of the textile industry require such a school, but through the rapid development of the manufacture of the coarser cotton fabrics in the southern states, a crisis had arrived in the leading industry of New England which could only be met by wider and more thorough application of the sciences and arts for the production of finer and more varied fabrics.

Modeled on the lines of the departments of the higher Polytechnic Institutes, it offers thorough instruction in the elements and principles of the sciences and arts applicable to textile and kindred branches of industry. Its courses of instruction treat of the application of these principles in the processes and machinery required in the manufacturing of all varieties of textile fabrics.

In industrial education the distinction between Trade and Technical Industrial Schools is coming to be understood. The Lowell School belongs to the latter class. Beginning with limited equipment, instructing staff, and means, instruction at first was by Mill or Trade school methods—the pupil was brought directly to the machine, its parts and operation in manufacturing explained to him. The curriculum was, however, rapidly extended, as contemplated in the original plan, department after department opened and equipped, and commodious and well adapted buildings provided for a permanent home.

While the progress of invention and the demands of ever changing markets will compel constant improvement in methods and additions to the very extensive equipment, the period of



COTTON CARDING



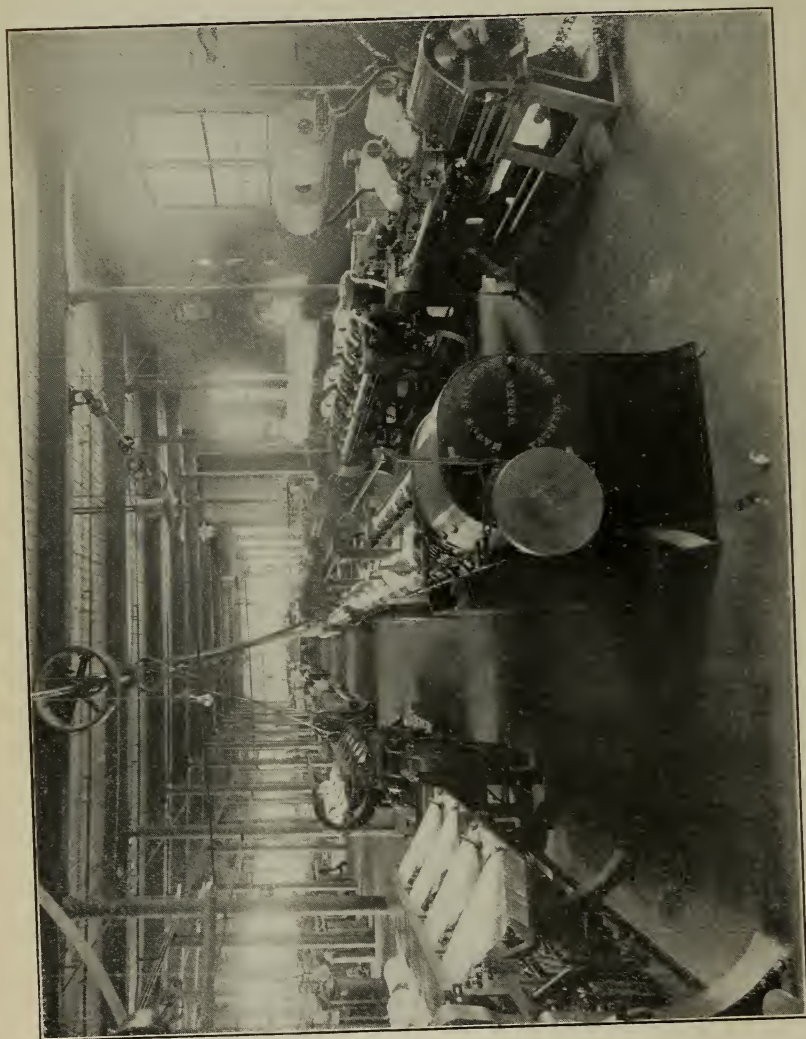
establishment is substantially closed. All departments are open for instruction in all branches of the textile art under extensive and able corps of instructors and assistant instructors.

Of the incorporators the permanent trustees (limited to twenty) are mainly representatives, as president, treasurer, agent, or superintendent, of the management of great textile or textile machine corporations of the Commonwealth. Associated with them *ex officii*, are His Honor, the Lieutenant Governor and the Commissioner of the State Board of Education, together with two trustees appointed for four-year terms by the Governor and Council. The Mayor, the President of the Municipal Council, the Superintendent of Schools, and a representative of the textile council of the city of Lowell are also members. At the session of 1905 the Legislature authorized the graduates of the school to elect two additional trustees, and by an act of 1906 the number was increased to four for four-year terms, one being elected each year. By the terms of the by-laws at least three-fourths of the permanent trustees must be persons "actually engaged in or connected with textile or kindred manufactures."

Lowell, Massachusetts, is called the "Mother Textile City of America," and in locating the school at this center a considerable advantage is secured for the reason that every commercial fibre is utilized in the products of the great Merrimack Valley Textile district. The practical work of the school is therefore kept closely in touch with the several branches of the industry which are included in the courses of study.

His Excellency, Governor Roger Wolcott, formally opened the school on January 30, 1897, and there was present a large gathering of men representing New England's textile industries. The regular classes of the school were opened on February 1, 1897, and have been regularly conducted since that time.

On January 1, 1903, the School was transferred from the rented quarters that it had occupied for five years to the site and building where it is permanently located. On February 12, 1903, his Excellency, Governor John L. Bates, in the presence of a large number of guests representing the Legislature as well as the educational, textile, and commercial interests of the Commonwealth, dedicated the present buildings.



COTTON COMBING

The site is a commanding one, consisting of about fifteen acres at a high elevation, on the west bank of the Merrimack River. It extends to and overlooks the rapids of Pawtucket Falls which was the first water power in America to be used on an extensive scale to operate power looms. It was contributed by Frederick Fanning Ayer, Esquire, of New York City, and the Proprietors of the Locks and Canals on the Merrimack River. The buildings consist of Southwick Hall, Kitson Hall, the Falmouth Street Building, Colonial Avenue Laboratories, and a power plant located east of the Falmouth Street Building.

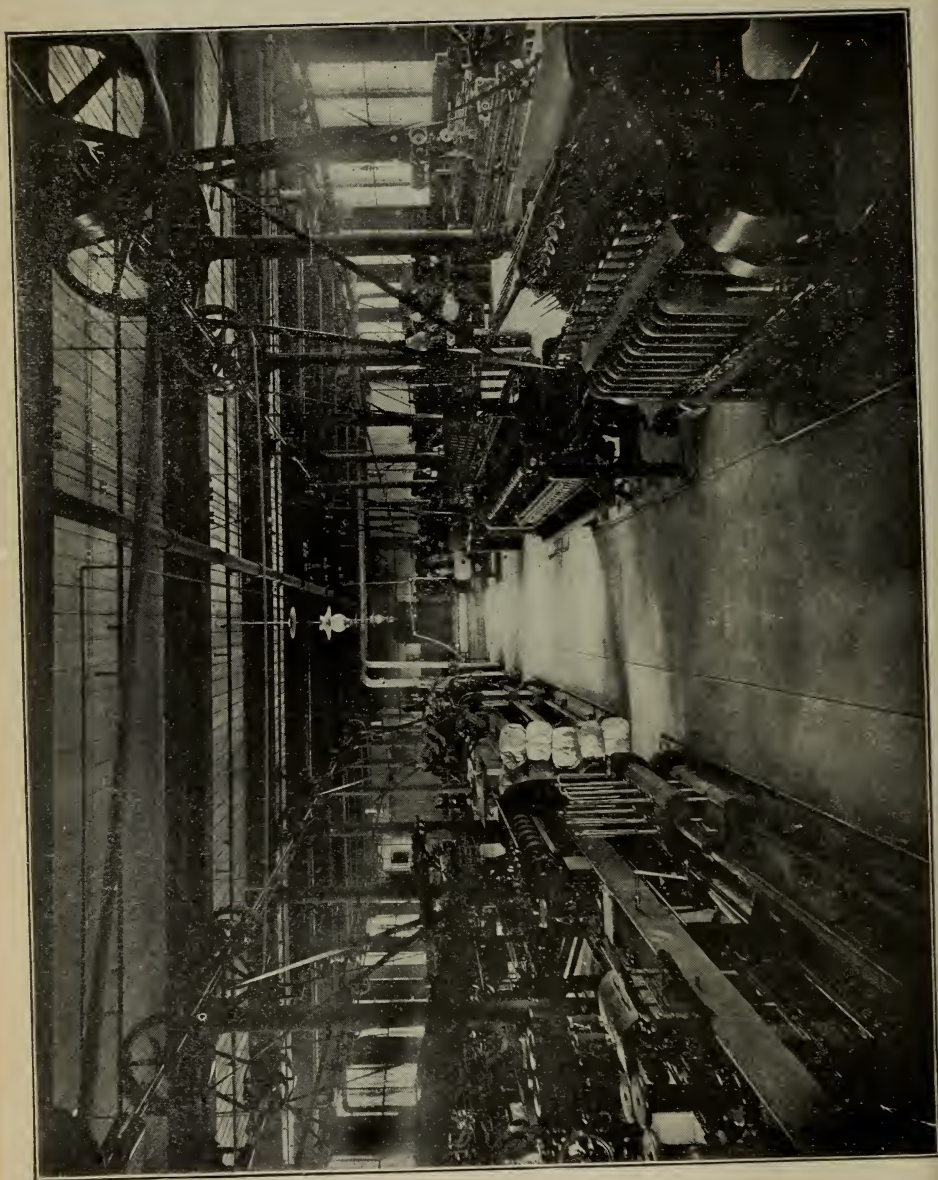
Southwick Hall was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esquire, of New York City, and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 x 90 ft., having three stories and two wings 80 x 85 ft. each with two stories and well lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing Departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing Departments.

Kitson Hall, dedicated to the memory of Richard Kitson was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor.

This hall makes a right angle with Southwick Hall, is 60 feet by 252 feet and has one story and a basement. The first floor is occupied by the Cotton Yarn and Knitting Departments, while the basement contains the Mechanical and Electrical Engineering Laboratories and the Machine Shop.

The Falmouth Street Building forms the third side of the quadrangle and consists of three portions, one 60 x 75 ft., three stories, one 75 x 130 ft., three stories, and the head house 70 x 80 ft., three stories and basement. The building is occupied by the picking section of the Cotton Yarn Department, the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment





for the manufacture of wool yarn from the fleece, to the finished yarn spun by either the English or French systems. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms and a section of the building is occupied by the Students' Lockers and Recreation Rooms.

Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department. The work of construction was also in charge of the engineers of this department. The building completes the fourth side of the quadrangle and in outward appearance corresponds to the architectural features of the other school buildings. It is a single story building and has the dimensions of 195 x 60 ft. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing Departments that occupy this building. The funds for this building were provided by the state of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows:

Cotton Yarns and Knitting .....	16,200 sq. ft.
Woolen and Worsted Yarns .....	28,160 " "
Textile Design and Decorative Art .....	16,806 " "
General Chemistry and Dyeing Laboratories .....	28,400 " "
Finishing Cotton, Woolen and Worsted .....	10,606 " "
Power Weaving .....	15,360 " "
Textile Engineering .....	24,297 " "
Power Plant .....	10,047 " "
Assembly and Physical Culture Halls .....	10,800 " "
Entrances, corridors, stairways, etc. ....	14,487 " "

The additional floor space is devoted to Administration Offices, Library, Assembly Halls, Class Rooms, Store Rooms, etc.

Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, to meet the needs of the textile and kindred industries, it has developed its curriculum, its methods of instruction, and





WOOL SORTING

equipment as those needs arose. At this writing its chemical and dyeing, decorative art, design, yarn and weaving departments are liberally housed, equipped, and provided with able instructors for the highest efficiency, though additional floor space is required and is being provided as the roster of pupils increases. This objective will be kept constantly in view and as new demands are presented an effort will be made to extend courses, equipment and floor space.

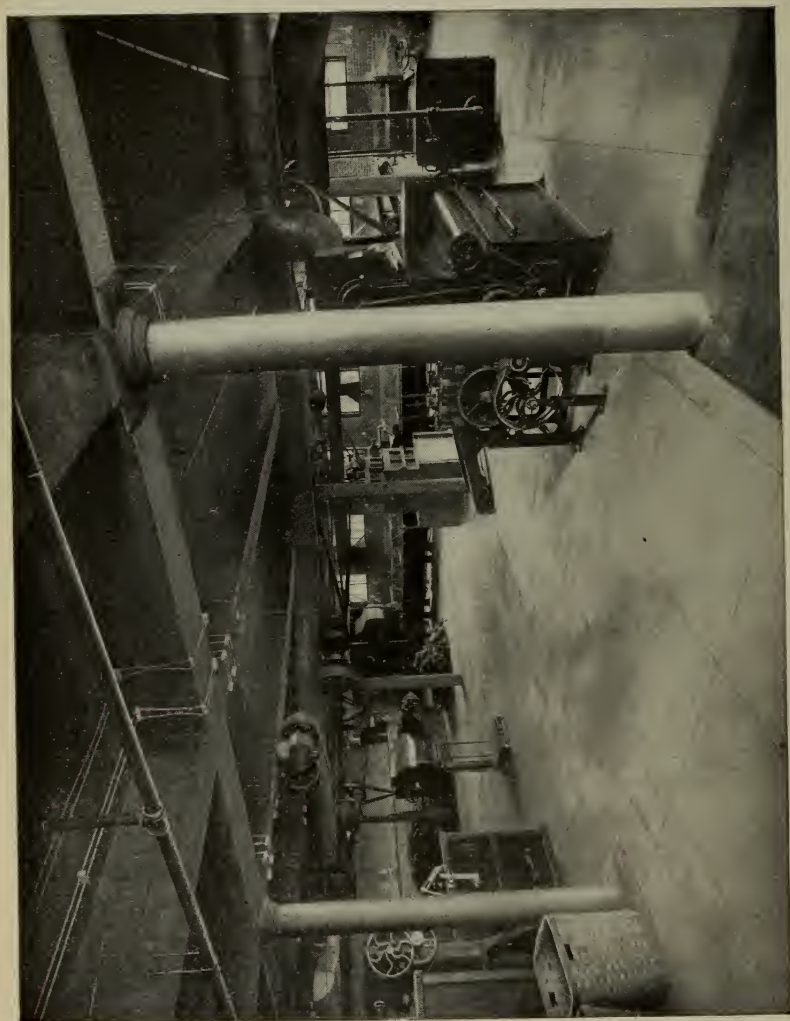
The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this. There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric, within the school.

The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualifications equivalent to those given by a regular four-year course of a high school or academy of good standing.

The evening classes are held for about twenty weeks of the year and are for those who are unable to attend the day courses. These are similar to the day courses, but are aimed especially to meet the needs of students working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education.

The school has so advanced in the standard and character of its work, as well as the standard for admission to its day classes, that the Legislature of the State of Massachusetts granted to the school the power to confer degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Dyeing (B. T. D.) upon those students who satisfactorily complete one of the prescribed four-year courses.

The growth of the school has been constant, as is evident from the fact that when it was opened February 1, 1897, there were 32 day and 110 evening pupils. January 1, 1916, the roster showed 154 day pupils and 789 evening pupils or 943 in all.



WOOL SCOURING AND CARBONIZING

## EQUIPMENT

The equipment of machinery, inventoried July 1, 1915, at \$268,405., is most varied for textile educational purposes, and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to mutual advantage of student and manufacturer.

### ENTRANCE REQUIREMENTS AND FEES

#### *Ginning*

- One 50 saw gin made by Daniel Pratt Gin Co., Prattsville, Ala.
- One Prior Roller Gin.

#### *Opening, Picking and Waste Machinery*

An outfit of Kitson Picking Machinery from works of Saco-Lowell Shops, Lowell, Mass., including:

- One 40 in. Two Beater Breaker Lapper with automatic feeder.
- One 40 in. Single Beater Intermediate Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps.
- One 40 in. Single Beater Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps, Kirschner Patent Carding Beater.
- One Roving Waste Opener.
- One Thread Extractor.

The power for this picker section is furnished through a Westinghouse 15 h. p. 220 volt direct current motor.

#### *Carding, Combing and Drawing*

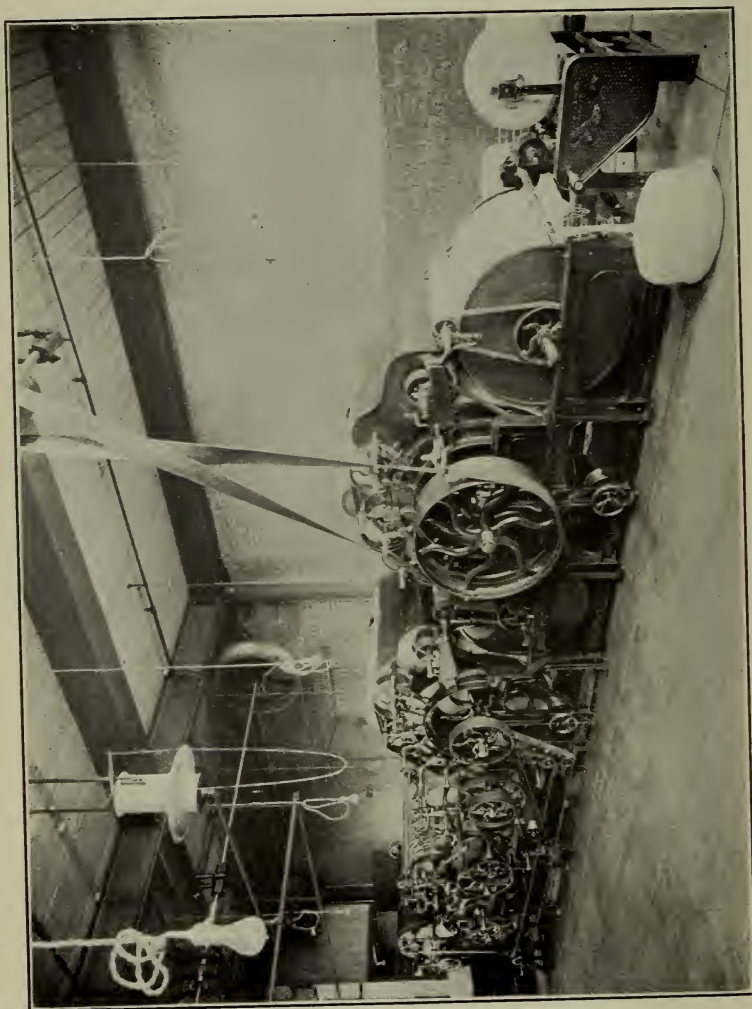
The following machinery made by the Saco-Lowell Shops, Lowell, Mass.

- One Top Flat Card.
- Three Revolving Flat Cards.
- Two Railway Heads.
- Two Drawing Frames.

One of these cards is equipped with Chapman Electric Neutralizer, made by the Chapman Electric Neutralizer Co., Portland, Me.

From Saco-Lowell Shops  
Stripping Rolls, etc.





WORSTED CARD



From the Whitin Machine Works, Whitinsville, Mass.

One 40 in. Revolving Flat Card.

Card Grinding Rolls.

One Sliver Lapper.

One Six Head Ribbon Lapper.

One Four Head Ribbon Lapper.

One Two Head Comber.

One Six Head Comber.

One Eight Head High Speed Comber.

From the Mason Machine Works, Taunton, Mass.

One Sliver Lap Machine.

One Comber.

From John Hetherington & Sons, Ltd., Manchester, Eng.

One Two Head Comber.

One Model Comber Head.

*Roving, Spinning and Twisting*

From Saco-Lowell Shops, Lowell, Mass.

One Slubber.

One Intermediate.

One Fine Frame.

One Jack Frame.

Three Ring Spinning Frames.

One Spinning Mule.

One Spooler.

One Wet and Dry Twister.

From Fales & Jenks, Pawtucket, R. I.

One Wet and Dry Twister.

From Draper Company, Hopedale, Mass.

One Wet and Dry Twister.

From Whitin Machine Works, Whitinsville, Mass.

Three Ring Spinning Frames.

From Woonsocket Machine and Press Co., Woonsocket, R. I.

One Intermediate Fly Frame.

From Asa Lees Co., Oldham, England, Wm. Firth Company, Agents.

One Mule for fine spinning.

*Miscellaneous Machinery of this Department includes:*

From the Saco-Lowell Shops, Lowell, Mass.

One Reel.

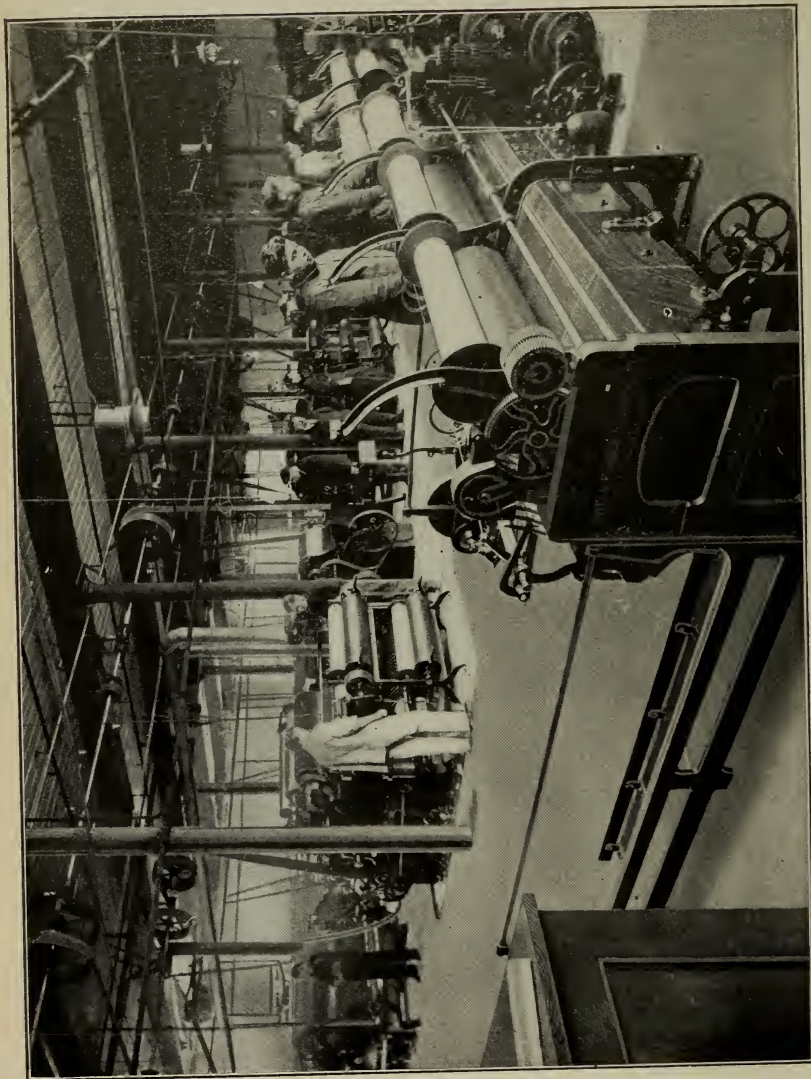
One Model Fine Fly Frame.

One Model Fly Frame Compound.

One Model Card Feed.

One Model Flat Grinding Device.

One Model Scroll Setting Device.



WOOLEN YARN DEPARTMENT

From Draper Company, Hopedale, Mass.

One Weeks Banding Machine.

One Moscrop Single Thread Testing Machine.

Miscellaneous Machines.

One Yarn Inspection Machine with blackboards.

Two Barbour Knotters.

Two Yarn Reels and Grain Scales.

One Power Yarn Tester.

One Twist Counter.

From Howard Brothers, Worcester, Mass.

One Exhibition Board of Hand Cards.

One Exhibition Board of Card Clothing.

The power for this department is furnished through:

One 10 h. p. Allis Chalmers motor, and one 15 h. p. Allis Chalmers motor.

### **Knitting Department Equipment**

#### *Winding Machinery*

One Universal Winder 6 spindles for cones and tubes.

One Payne Bobbin Winder.

One Foster Winder 10 spindles for cones and tubes.

#### *Hosiery Machines*

One Acme full automatic  $3\frac{3}{4}$  in. cyl. 160 needles.

One Acme full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 120 needles.

One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Mayo Model C full automatic  $3\frac{3}{4}$  in. cyl. 220 needles.

One Scott & Williams new automatic  $3\frac{3}{4}$  in. cyl. 176 needles.

One Scott & Williams Model G  $3\frac{3}{4}$  in. cyl. 220 needles.

One Banner full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.

One Brinton full automatic  $3\frac{3}{4}$  in. cyl. 176 needles.

One Branson hand machine,  $3\frac{1}{2}$  in. cyl. 80 needles.

Machines in this group are equipped with special attachments for producing lace front work, high splicing, double soling and striped work.

One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 160 needles.

One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.

One Wildman Fancy Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.

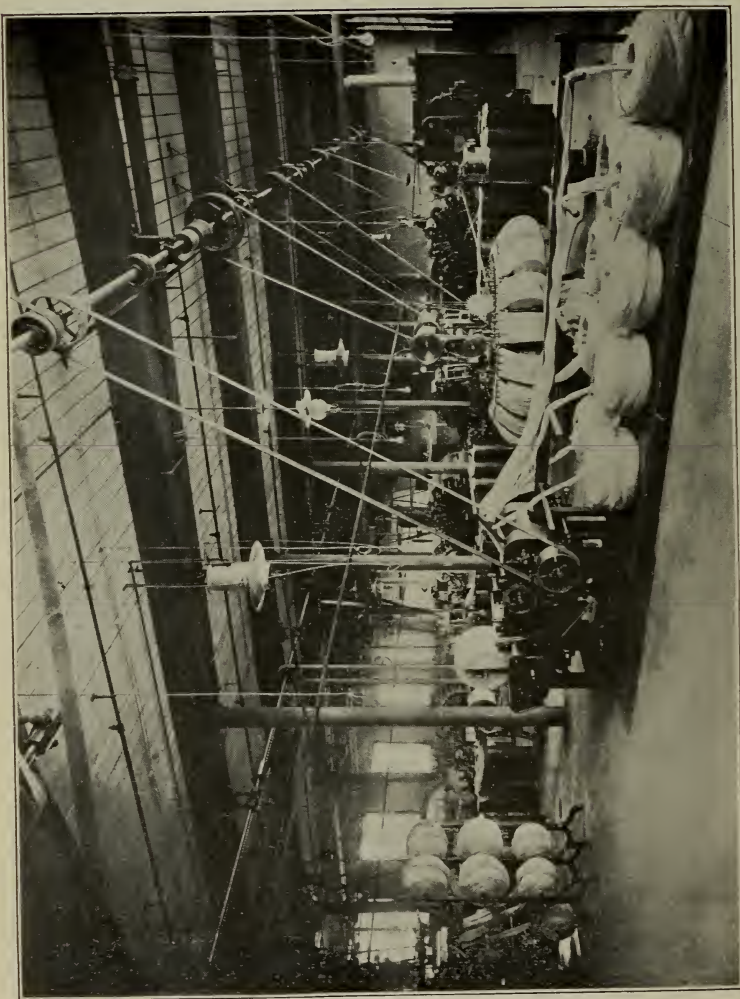
One Wildman Ribber  $3\frac{1}{2}$  in. cyl. 220 needles.

One Wildman Striping Ribber  $5\frac{1}{4}$  in. cyl. 240 needles.

One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.

One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.

One Brinton Tie Machine  $1\frac{3}{4}$  in. cyl. 100 needles.



WOOL COMBING



### *Underwear Machinery*

- One Crane Spring Needle Machine 19 in. cyl. 1040 needles.
- One Scott & Williams Ribber 19 in. cyl. 12 cut.
- One Wildman Ribber 20 in. cyl. 8 cut.

### *Flat Machines*

- One Lamb glove machine 8 in. bed 6 cut.
- One Lamb Knitting Machine 18 in. bed 5 cut.
- One Lamb Sweater Machine 24 in. bed 4 cut.
- One Grosser Sweater Machine 32 in. bed 3 cut.
- One Grosser Jacquard Machine 16 in. bed 10 cut.
- One Dubied Scarf Machine 18 in. bed 18 cut.

### *Finishing Machines*

- One Grosser 2 thread looper 22 point.
- One Hepworth looper 16 point.
- One Beattie looper 16 point.
- One Beattie looper 3 point.
- Five Union Special Sewing Machines for Overseaming, Double Stitch Covering, Seaming and Welting and Vest Finishing.
- Six Merrow Sewing Machines including two shell stitch machines and three overseaming and crocheting machines.
- Three Singer Machines for plain sewing, button holing and button sewing.

The power for this department is supplied through a 7½ h. p. 220 volt Westinghouse motor.

## **WOOLEN AND WORSTED DEPARTMENT**

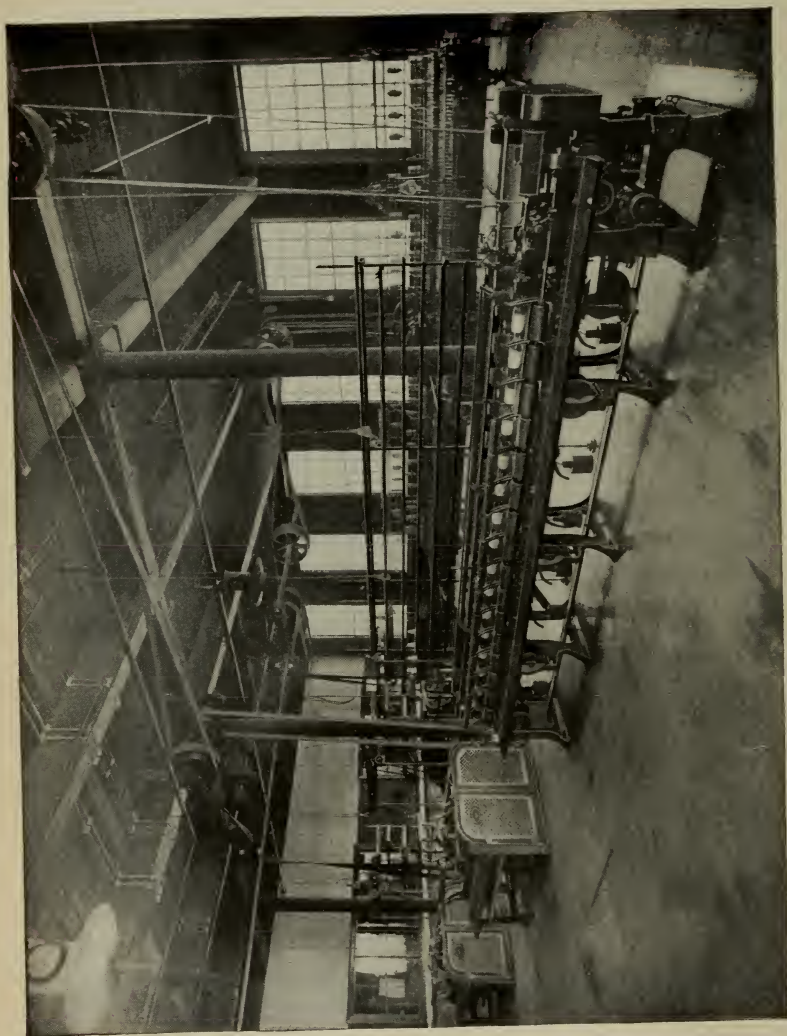
### *Wool Sorting and Grading*

This department is thoroughly equipped with benches, baskets, etc., for sorting wool in a convenient manner, and in addition there are samples of all grades and types of wool and other fibres.

### *Scouring and Carbonizing*

- Wool Scouring Machinery, C. G. Sargents' Sons Corp., Graniteville, Mass., consisting of
  - Cone Duster for Grease Wool.
  - Two Scouring Bowls, each 17 ft. x 24 in., with Parallel Rakes.
  - One Automatic Feeder for Scouring Bowls.
  - One Automatic Feeder for Dryer.
  - One Single Apron Dryer.
  - Carbonizing Screw Acid Tank.
  - Carbonizing Duster, with Crush Rolls.
- From North Chelmsford Machine Co.
  - One Rinse Box.
- From Schaum & Uhlinger, Philadelphia, Pa.
  - One Hydro-Extractor.





FRENCH SPINNING

From C. S. Dodge, Lowell, Mass.

One Shoddy Picker,

One Bagging Stand.

The power for this department is supplied through a 20 h. p. General Electric 220 volt motor.

## Woolen

### *Picking*

One Parkhurst Burr Picker, Atlas Mfg. Co., Newark, N. J.

One Mixing Picker, Davis & Furber Machine Co., North Andover, Mass., equipped with Improved Mixing Picker Feed, and Spencer Oiler, both made by George S. Harwood & Son, Boston, Mass.

### *Carding*

One set of Woolen Cards, including :

First Breaker, Second Breaker and Finisher, Davis & Furber Machine Co., North Andover, Mass.; this set of cards equipped with Bramwell First Breaker Feed (George S. Harwood & Son, Boston, Mass.); Torrance Balling Head and Creel, (Torrance Mfg. Co., Harrison, N. J.) between First Breaker and Second Breaker; Apperly Feed (George S. Harwood & Son, Boston, Mass.) between Second Breaker and Finisher, and Combination Rub Rolls and Apron Condenser, (Davis & Furber Machine Co., North Andover, Mass.), on Finisher. These cards are for medium or coarse work.

One set of Davis & Furber Woolen Cards, including :

First Breaker, Second Breaker and Finisher. This set of cards equipped with Bramwell First Breaker Feed, (George S. Harwood & Son, Boston, Mass.); Apperly Feed with Kemp Traveller, (George S. Harwood & Son, Boston, Mass.), between First Breaker and Second Breaker; Bates Feed (E. V. Bates, Lowell, Mass.), between second Breaker and Finisher, and Davis & Furber Double Apron Condenser, on Finisher. These cards are for fine work.

Both sets of cards are equipped with Chapman Electric Neutralizer, made by Chapman Electric Neutralizer Co., Portland, Me.

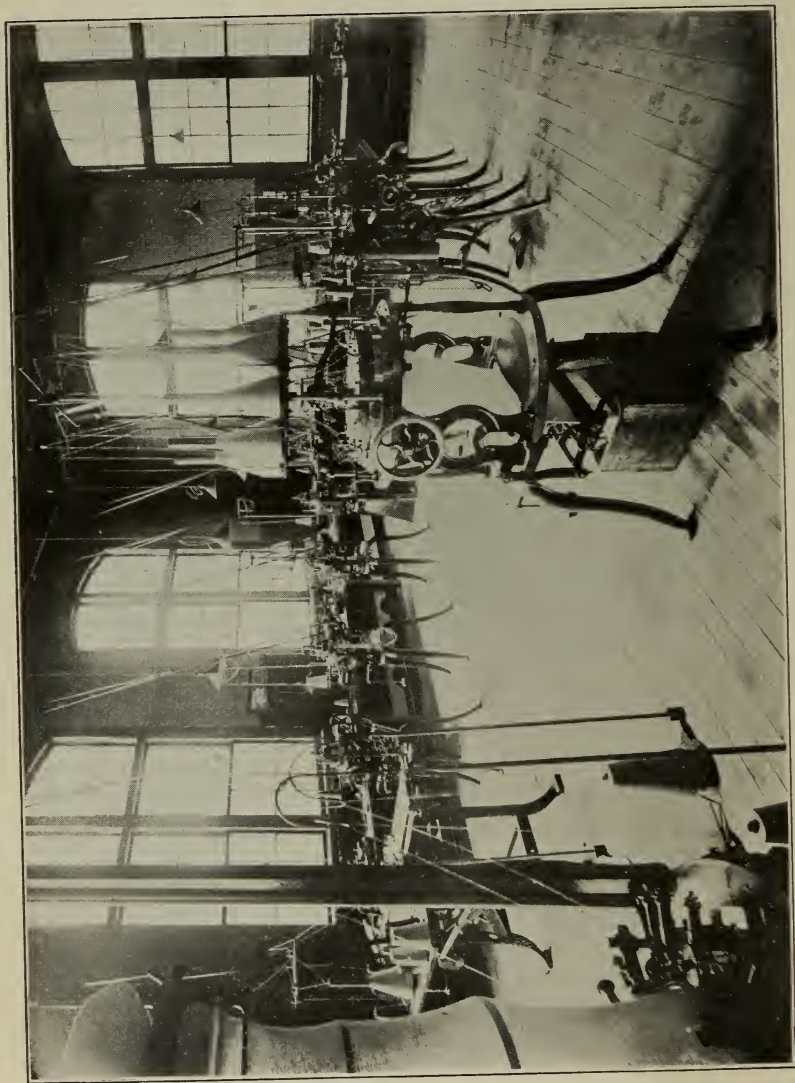
One Sample Mixing Card, Torrance Mfg. Co., Harrison, N. J.

### *Spinning*

One Spinning Mule, 120 spindles, Davis & Furber Machine Co., North Andover, Mass.; Bobbin Holders, supplied by American Bobbin Holder Co., W. Medway, Mass.

One Spinning Mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; Bobbin Holders supplied by Murdock & Geb, Franklin, Mass.

One 1907 Fancy Yarn Twister, 20 spindles, Davis & Furber Machine Co., North Andover, Mass.



KNITTING DEPARTMENT

### *Card Grinding*

- One Roy Grinding Frame, B. S. Roy & Son, Worcester, Mass.
- Two Roy Traverse Grinders, B. S. Roy & Son, Worcester, Mass.
- One Entwistle Traverse Grinder, T. C. Entwistle Co., Lowell, Mass.
- One Complete set of Carder's Tools, W. H. Brown, Worcester, Mass.

## **Worsted**

### *Carding*

- One 50-inch Double-cylinder Worsted Card (4 lickerin), Davis & Furbur Machine Co., North Andover, Mass., equipped with Bramwell Feed, George S. Harwood & Son, Boston.; also equipped with a Chapman Electric Neutralizer, Chapman Electric Neutralizer Co., Portland, Me.

### *Backwashing*

- One Double Bowl, Five Cylinder Backwasher, with Gill Box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland Patent pressure motion.

### *Gilling*

- One Doubling Balling Head Gill Box (with double screws), Saco-Lowell Shops, Lowell, Mass.
- One Weigh Gill Box and Creel, Saco-Lowell Shops, Lowell, Mass.

### *Combing*

- One Baller, (punch), Crompton & Knowles, Worcester, Mass.
- One Noble Worsted Comb, Crompton & Knowles, Worcester, Mass.

### *Gilling*

- One Finishing Can Gill Box, Hall & Stell, Keighley, England.
- One Finishing Balling Head Gill Box, Hall & Stell, Keighley, England.

## **Bradford System of Drawing, Spinning and Twisting**

The following Drawing, Spinning and Twisting Machinery, from Prince Smith & Son, Keighley, England.

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| One Revolving Creel for 12 Balls. | One Double Head Can Gill Box.       |
| One 2 Spindle Drawing Box.        | One 2 Spindle Gill Box.             |
| One 2 Spindle Weigh Box.          | One 2 Spindle Flyer Spinner.        |
| One 4 Spindle First Finisher.     | One 12 Spindle Ring Spinner.        |
| One 12 Spindle Dandy Reducer.     | One 12 Spindle 2 Fold Cap Twister.  |
| One 12 Spindle Cap Spinner.       | One 12 Spindle 6 Fold Ring Twister. |

The following Drawing, Spinning and Twisting Machinery from the Saco-Lowell Shops, Lowell, Mass.

- |                                |  |
|--------------------------------|--|
| One 2 Spindle Drawing Box.     | One 8 Spindle Cone Rover.              |
| One 6 Spindle Second Finisher. | One 48 Spindle Cap Spinner, 5 ft. end. |
| One 24 Spindle Dandy Rover.    | One 48 Spindle Cap Spinner, 4 ft. end. |
| One 6 Spindle Cone Reducer.    | One 48 Spindle Boyd Ring Twister.      |





DESIGN LECTURE ROOM



One Six Gang Universal Winder, equipped for cones or straight tubes,  
Universal Winding Co., Boston, Mass.

One Tape Band Sewing Machine, The Singer Mfg. Co., New York.

The power for the Yarn Department as well as for the Power Weaving Department is supplied through two 24 h. p. Allis-Chalmers motors.

### French System of Drawing and Spinning

The machinery made by the "Societe Alsacienne de Constructions  
Mechaniques" at Mulhouse, France, consists of the following:

Peigneuse-Laine modèle P. L. B.	Model P. L. B. Comb with creel for 24 doublings.
Intersecting de 2 têtes. Pass. I and II après Peigneuses.	Intersecting Gill Box (2 heads)
Gill Box (2 têtes)	Gill Box (2 heads)
Étirage à Frottoirs (2 têtes)	1st Drawing (2 heads)
Étirage à Frottoirs (2 têtes)	2nd Drawing (2 heads)
Étirage à Frottoirs (2 têtes)	3rd Drawing (2 heads)
Étirage Réunion (4 Peignes)	Reducer (4 Porcupines)
Bobinier de Chûte (8 Peignes)	Slubber (8 Porcupines)
Bobinier (8 Peignes)	1st Intermediate (8 Porcupines)
Bobinier (8 Peignes)	2nd Intermediate (8 Porcupines)
Bobinier (8 Peignes)	Rover (8 Porcupines)
Finisseur (16 Peignes)	Finisher (16 Porcupines)
Self-acting à Filer (150 Broches)	Self-acting Worsted Mule (150 Spindles)

The apparatus in this department for obtaining and preserving the  
requisite condition of humidity consists of:

Four Humidifiers of the American Moistening Co., Boston, Mass.

Twelve Turbo Humidifier Heads from The G. M. Parks Co., Fitch-  
burg, Mass. The compressed air for these heads is supplied by  
an Ingersoll-Rand 8 x 8 steam driven air compressor located in  
power house.

The power for this department is supplied through a 15 h. p. Allis-  
Chalmers Co.'s 220 volt motor.

### Textile Testing Laboratory

Several years ago the importance of testing fibres, yarns and fabrics  
began to be appreciated and through the generosity of a friend a beginning  
was made by the establishment of a laboratory where the physical prop-  
erties of textiles may be determined and studied. To the original equip-  
ment has been added several pieces of apparatus, so that there is in the  
laboratory the following equipment:—

One Bausch and Lomb D. D. Microscope provided with regular eye  
pieces and objective for low power, high power or photographic  
work.

One Eye Piece Micrometer.

One Filar Micrometer (1 inch equivalent eye piece) for refined  
diameter determinations.



DECORATIVE ART

One Standard Glass Stage with corrections from comparison against the International m. m.

Complete outfit for mounting slides and for taking photo-micrographs  
Camera Lucida.

Microtome Sectioning Outfit.

One Small Skein Testing Machine.

One Gas Conditioning Oven for moisture determination.

One Single Yarn Testing Machine made by G. R. Smith & Co., Bradford, England.

One Hydraulic Cloth Strength Testing Machine for 4 inch samples.  
Made by G. R. Smith & Co., Bradford, England.

One Hand Cloth Strength Testing Machine for 1 inch samples. Made by Brown Bros., Providence, R. I.

One Brown & Sharpe Meter Reel.

One Strength Testing Machine. Made by Louis Schopper, Leipzig, Germany. Capacity 500 kilograms for test pieces 50 m. m. in width and from 100 to 400 m. m. in length. Provided with special jaws to test twine, strings, cords or fabrics.

One Fibre Testing Machine made by Louis Schopper. Capacity 1 gram to 1.5 kilogram. Provided with jaws to test fibre or fine yarns.

One Yarn Strength Testing Machine made by Louis Schopper. Capacity 1000 grams to 5000 grams. Length of test pieces 200 m. m. to 1000 m. m.

One Yard Strength Testing Machine made by Louis Schopper. Capacity 5 kilograms to 30 kilograms. Test pieces 500 m. m.

One Hygrometer Dr. Koppe's System.

One Accurate Tread or Pick Counter.

One Universal Quadrant Scales for determining counts of yarn by the various yarn systems in use.

These last three pieces of apparatus are also made by Louis Schopper, Leipzig, Germany.

One Lowinson's Thread Micrometer, Charles Lowinson, N. Y. City.

The laboratory has been constructed to give plenty of light. The temperature and humidity of the room is controlled by the Automatic Humidity and Temperature Regulator made by the American Moistening Company of Boston, Mass.

### *Yarn Weighing and Testing*

From Lowell Scale Company:

One Large Platform Scale.

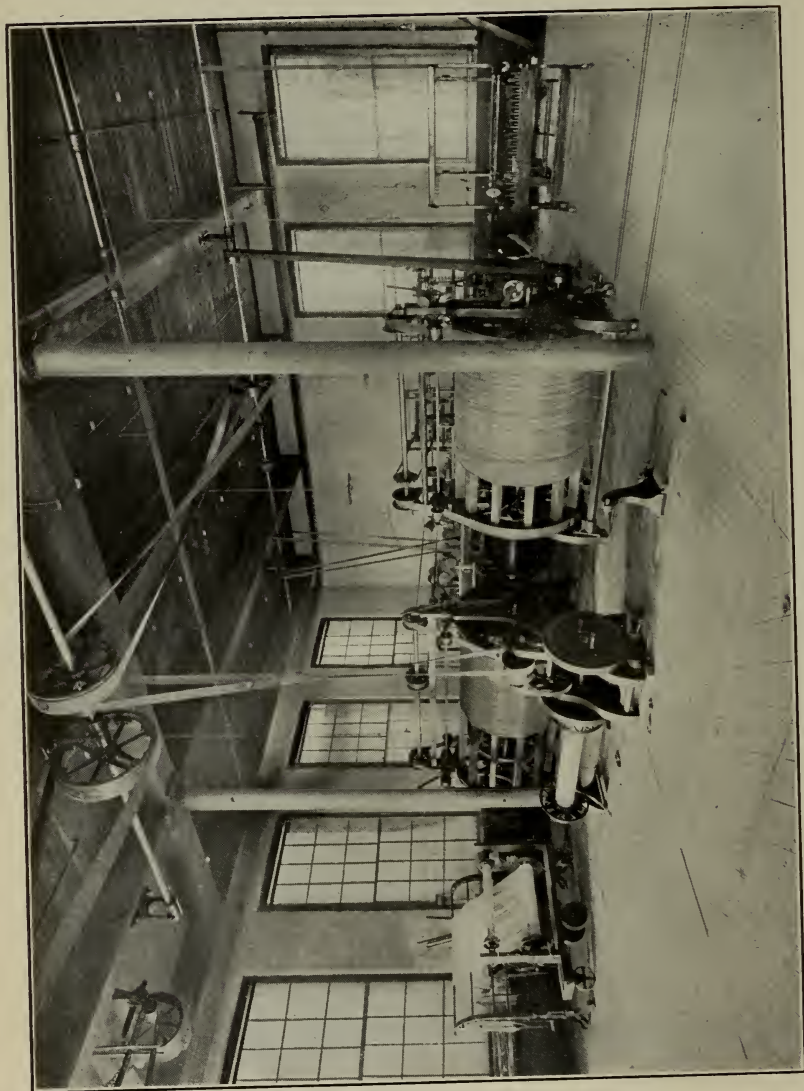
From Howe Scale Company:

One Dram Scale.

One Gram Scale.

One Ounce Scale.

One Pound and Ounce Scale.



WOOLEN AND WORSTED WARP PREPARATION



Two Yarn Reels.  
 One Roving Reel.  
 Three Grain Scales.  
 One Run Beam.  
 One Hand Yarn Strength Tester.  
 Two Twist Counters.  
 Two Barbour Knotters.  
 Complete Set of Roving Cans from the Laminar Fibre Co., North Cambridge, Mass.

## DESIGN AND POWER WEAVING DEPARTMENT

### *Design Department*

One Christian Becker Balance.  
 Three Bausch & Lomb Balances.  
 One Twist Tester—James H. Heal, Halifax, England.  
 One Microscope—Bausch & Lomb.  
 One Reel—Brown & Sharpe Mfg. Co., Providence.  
 One Pick Counter—Chas. Lowinson, N. Y.  
 One Torsion Calculation Balance, Torsion Balance Co., N. Y.  
 One Grain Roving Scales, Brown & Sharpe, Providence.  
 One Gramme Roving Scale. Brown & Sharpe, Providence.  
 Miscellaneous dies for cutting accurately standard sizes of cloth.

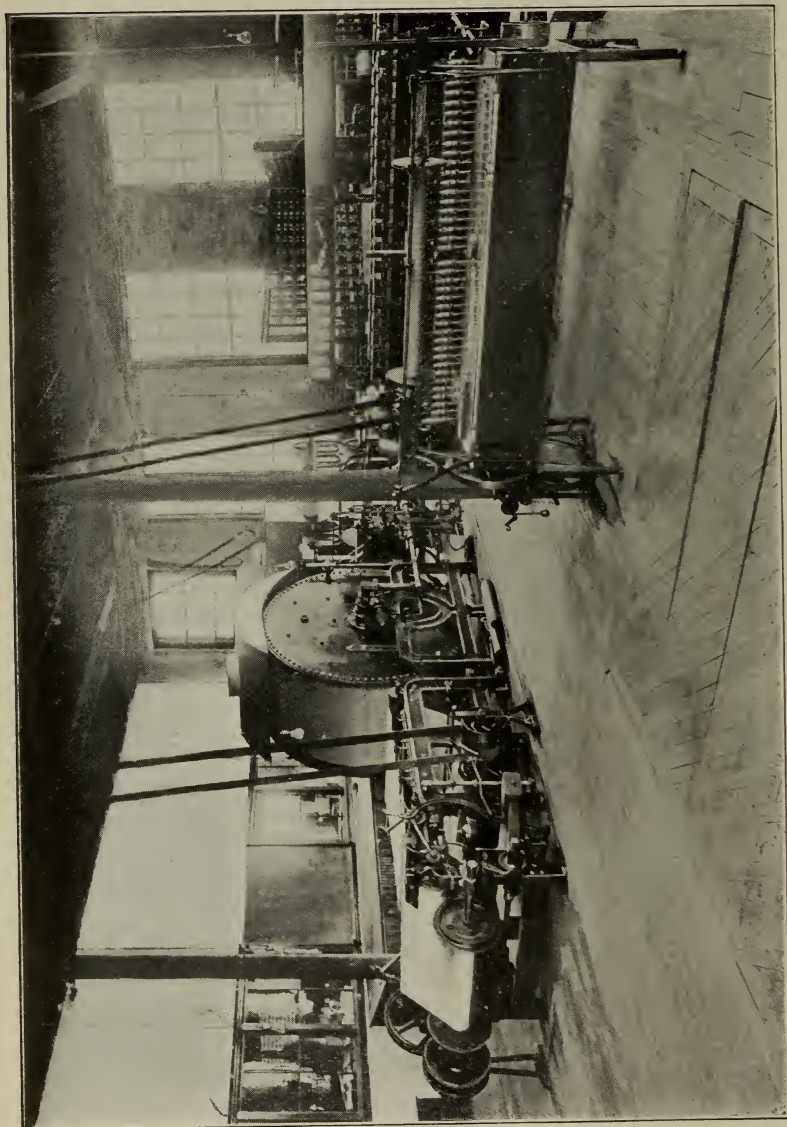
### *Cotton Warp Preparation*

One Spooler, Saco-Lowell Shops, Lowell, Mass.  
 One Warper, Saco-Lowell Shops, Lowell, Mass.  
 One Slasher, Saco-Lowell Shops, Lowell, Mass.  
 One Beamer, T. C. Entwistle Co., Lowell, Mass.  
 One Winder, Altemus & Co., Philadelphia, Pa.  
 One 400 End Improved Draper Warper, Draper Co., Hopedale, Mass.  
 Drawing-in Frames, etc.  
 One Pat. Slasher Press Roll, J. Battles & Co., Lawrence, Mass.  
 One Pat. Expansion Comb for Warper, T. C. Entwistle Co., Lowell, Mass.  
 One Quiller, Johnson & Bassett, Worcester, Mass.  
 Set of six in. spools for Warper, Macrodi Fibre Co., Woonsocket, R. I.  
 One Universal Winder for Cop and Bobbin winding, Universal Winder Co., Boston, Mass. This is driven by a 1-8 h. p. 220 volt direct current motor made by Holtzer-Cabot Electric Co.

### *Woolen and Worsted Warp Preparation*

Two 40 End Jack Spoolers.  
 Two Spool Racks for 12 spools each.  
 One Pattern Dry Frame Dresser.  
 One Pipe and Cylinder Dresser.





COTTON WARP PREPARATION

- One 60 inch Reel.
- One 82 inch Reel.
- One Double Head Beamer.

All made by the Davis & Furber Machine Co., North Andover, Mass.

#### *Braiding Machinery*

- One 24 Line Hercules Braider.
- One 12 Line Braider.
- One Tubular Braider.
- One Sautach Braider.

All made by the New England Butt Co., Providence, R. I.

#### *Silk Preparing Machinery*

- One Winder, Atwood Machine Co., Stonington, Conn.
- One Ribbon Quiller, Atwood Machine Co., Stonington, Conn.
- One Warper and Beamer, Swiss Style, Atwood Machine Co., Stonington, Conn.
- One Double Frame Atwood Machine Co., Stonington, Conn.

The power for the warp preparing section is supplied through a 7½ h. p. 220 volt General Electric Co. motor.

#### *Plain Looms*

- One Plain Northrup Loom, Draper Co., Hopedale, Mass.
- One Plain Print Cloth Loom, Whitin Machine Works, Whitinsville, Mass. To this is attached a Kip-Armstrong Warp Electric Stop Motion.
- One Plain Print Cloth Loom, Mason Machine Works, Taunton, Mass.
- One Kilburn & Lincoln Plain Loom.
- Eight Saco-Lowell Shops Plain Looms.
- One English Loom, Hattersley.
- One Improved Northrup Loom, fine sateen, Draper Company, Hopedale, Mass.
- One Eight Harness Corduroy Loom, Draper Company, Hopedale, Mass.
- One Side Cam Twill Loom, Whitin Machine Works, Whitinsville, Mass.
- One Five Harness Sateen Loom, Saco-Lowell Shops, Lowell, Mass.
- One Harriman Automatic Shuttle Changing Loom.
- One Lewiston Machine Co. Loom, 4 harness, side cam.
- One Crompton Jean Loom.

Four of the above looms are equipped with Abbott cleavers made by The Abbott Wire and Cast Steel Warp Cleaving Co., Lisbon Falls, Me.

#### *Fancy Looms*

- One Northrup Loom with dobby, Draper Co., Hopedale, Mass.
- One Lewiston Machine Company Bag Loom.
- One Knowles Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.



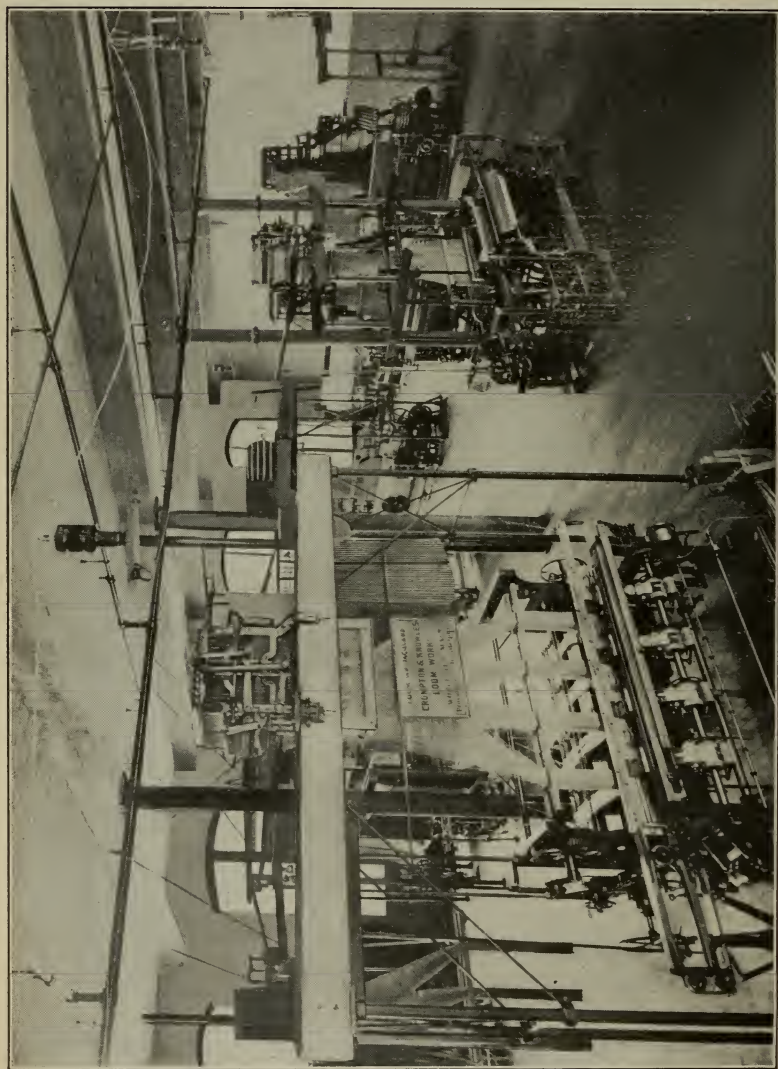
WEAVE ROOM

- One Crompton Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.
- One Crompton Towel Loom, 2 x 1 boxes, Crompton-Knowles Loom Works.
- One Crompton Lappet Loom, with 16 harness dobby, Crompton-Knowles Loom Works.
- One Knowles Fancy Cotton Loom, 20 harness dobby, 4 x 1 boxes, for fancy leno work, Crompton-Knowles Loom Works.
- One Knowles Fancy Cotton Loom, 25 harness dobby, Crompton-Knowles Loom Works.
- One Crompton Fancy Cotton Loom, single cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Knowles Gem Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Worsted Loom, 24 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Fancy Loom, 6 x 1 double cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Twenty Harness Dobby Loom, Whitin Machine Works, Whitinsville, Mass.
- One Crompton & Knowles Heavy Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Knowles Blanket Loom, 25 harness dobby, 4 x 1 boxes, Crompton-Knowles Loom Works.
- One Knowles Worsted Loom, 32 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Knowles Heavy Woolen Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Crompton & Knowles Intermediate Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works. One of these looms is operated by a direct connected  $\frac{3}{4}$  h. p. 220 volt 3 phase 60 cycle General Electric motor.
- One Model Dobby Attachment.
- One Stafford Ideal Loom, 16 harness, automatic shuttle changing device. Stafford Loom Co., Readville, Mass.

### *Jacquard Looms*

- One Knowles Fancy Loom, single lift Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, double lift Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, Jacquard tied up for leno, Crompton-Knowles Loom Works.
- One Knowles Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.





WEAVE ROOM, JACQUARD SECTION



- One Knowles Loom, 4 x 4 boxes, 54 inch, with 600 hook double lift double cylinder McMurdo Jacquard Head. Tied up for damask napkin designs.
- One Crompton Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Stafford Silk Loom, 1200 hook Halton Jacquard.
- One Crompton & Knowles 72 in. Tapestry Loom with 2600 hook Halton Jacquard Head.
- One 400 hook single lift, Schaum & Uhlinger Jacquard mounted for 4 bank narrow fabric loom. This loom is driven by a direct connected  $\frac{1}{2}$  h. p. 220 volt 60 cycle Westinghouse motor.
- One 840 hook double lift, single cylinder Jacquard on Crompton-Knowles 4 bank ribbon loom.
- One 800 hook, double lift Knowles Gem Silk Brocade Jacquard Machine, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Felix Tonnar German Plush Loom with 400 hook Crompton-Knowles Jacquard Head.
- One Skinner Brussels Carpet Loom Three-quarters wide equipped with 1280 hook Jacquard head. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### *Card Cutting Machines*

- One Jacquard Fine Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### **Hand Loom Weaving**

- Twelve Hand Looms, 3 x 3 boxes, 20 harness dobby.
- Eight Hand Looms, 4 x 4 boxes, 24 harness dobby.
- Eight Hand Looms, 3 x 3 boxes, 32 harness dobby.
- Six Hand Looms, 4 x 4 boxes, 30 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 32 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 600 hook Jacquard.
- One Hand Loom, 48 harness.
- Two Hand Looms with treadles.
- Pattern Warping Stands.
- Beaming, drawing-in stands, etc.



ORGANIC CHEMISTRY LABORATORY

## CHEMISTRY AND DYEING DEPARTMENT

### *Chemical Laboratories*

The General Chemistry and Qualitative Analysis Laboratory includes:

One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in Chemistry; also gas and water fittings, reagents and sinks.

Four Large Double Hoods.

Two Steam Baths.

Two Parson's Automatic Gas Generators.

### *Quantitative Laboratory*

One No. 1 Steam Heated Water Still made by Barnstead Water Still Co.

One Steam Drying Closet and Several Drying Ovens.

One Large Steam Bath.

One Electrolytic Table.

Five Hoods.

Fifty laboratory desks, each fully provided with apparatus.

### *Balance Room*

One Large Christian Becker Analytical Balance.

Seven Small Christian Becker Analytical Balances.

One Standing Analytical Balance.

One Eimer & Amend Analytical Balance.

One H. L. Becker's Sons & Co. Analytical Balance.

### *Organic Laboratory*

One Electric Combustion Furnace.

Three Gas Combustion Furnaces.

One Lother-Meyers Furnace for table.

Two Autoclaves.

One Ball Mill.

One tank of liquid chlorine from the Electro Bleach Gas Co., Buffalo, N. Y.

One automatic stirring apparatus.

One 3 h. p. Holtzer-Cabot Electric Co.'s motor.

Laboratory tables, lockers, hoods, electric ovens and heating apparatus, etc.

### *Instructor's Laboratory*

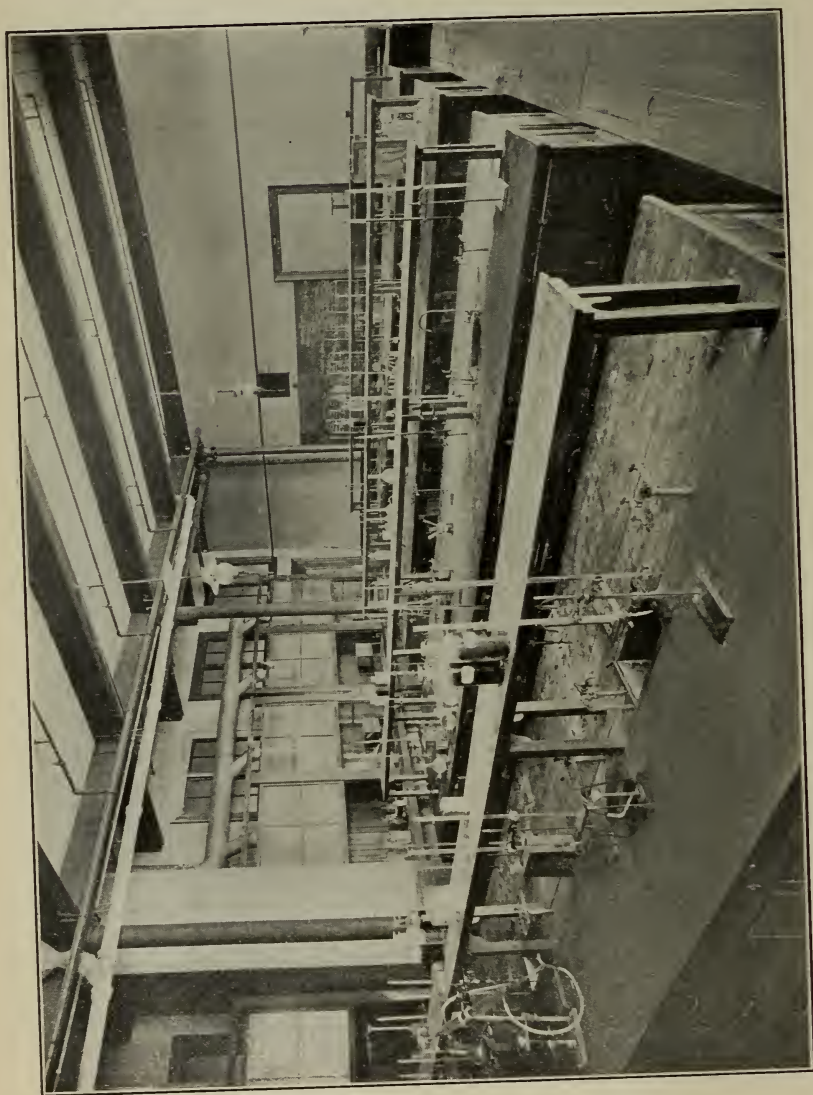
Adjacent to the Organic Laboratory is arranged an Instructor's Laboratory equipped with Steam Bath, Hood, Cases and Working Benches.

### *Microscopic, Photographic and Colorimetric Laboratory*

Two benches for microscopical work.

Five Bausch & Lomb Compound Microscopes.

One Natchet et Fils Compound Microscope.



QUANTITATIVE LABORATORY



One Tintometer.  
One Ives Colorimeter.  
One Polariscope made by Franz Schmidt & Haensch, Berlin, Germany.  
One Spectroscope made by John Browning, London, England.  
One Bausch & Lomb Model G Photomicrographic apparatus equipped with a B. & L. D. D. S. Microscope and all necessary apparatus.  
Desks and shelves for the apparatus and reagents necessary for this branch of the work.  
Adjoining this Laboratory is a dark room for Spectrum Analysis, Photometric and Photographic Work, etc.

*Assistant Instructor's Laboratory*

One Large Case of Chemicals.  
One Double Hood.  
One Copper Water Bath.  
One Soapstone Sink with a drain board.  
Benches, desks and complete fittings for water, gas and suction.

*Private Laboratory*

One Thoenner Balance.  
One Large B. & L. Microscope.  
One K. P. Bausch & Lomb Binocular Microscope.  
One Case of Chemicals and Apparatus.  
Three Laboratory Benches, with necessary fittings.  
One Large Hood.  
One Steam Bath.  
One Experimental Dye Apparatus.  
One Slate Sink and Drain Board.  
One Steam Jacketed Kettle.

*Chemical Lecture Room*

Is provided with a lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.

An electric arc reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats are provided for eighty students, and are arranged on a raised floor so that every student has a full view of the lecture table.

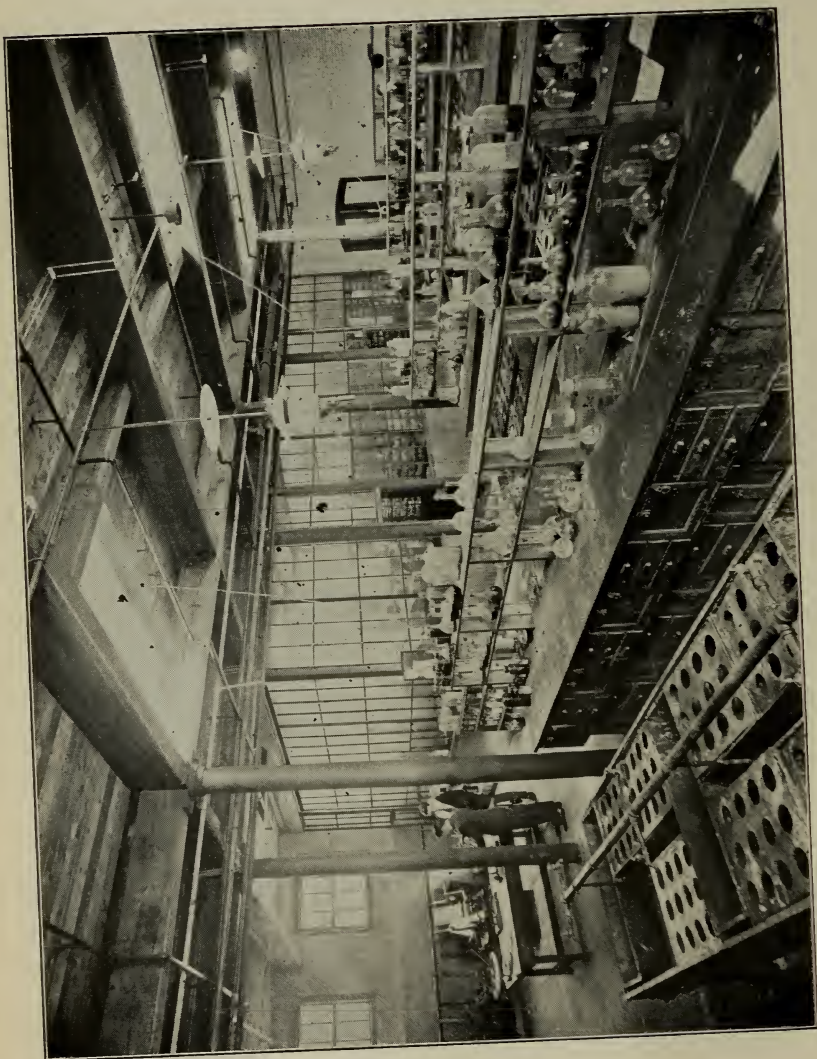
This room contains various collections of dyestuffs and chemicals for exhibition and for lecture demonstration.

*Experimental Dyeing Laboratory*

The dyeing laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

Fifty-six Steam Coil Experimental Dyeing Machines.





EXPERIMENTAL DYEING LABORATORY

- One Drying Chamber.
- One Ageing Chamber.
- One Hot Water Tank.

#### *Dye Stuff Room*

Adjacent to the Experimental Dyeing Laboratory there has been provided a well lighted room for the storage of a great variety of dyestuffs. Steel shelving has been arranged so that the samples are easy of access. All samples are catalogued in a card file, thus facilitating their use. In this same room is provided a sink and cement table with balances.

#### *Experimental Printing Laboratory*

- One Calico Printing Machine, made by Mather & Platt, Manchester, England.
- One Iron Jacketed Steaming Chamber from A. Edmeston & Son, Patricroft, England.
- One set of Steam Jacketed Copper Kettles.

#### *Fuel and Oil Analysis Laboratory*

- Mather Bomb Calorimeter, with complete outfit.
- Emerson Bomb Calorimeter, with complete outfit.
- Parr Calorimeter.
- Abbe Refractometer.
- Torsion Viscosimeter.
- Tagliabue Viscosimeter.
- Tagliabue Cold Test Apparatus.
- Pensky Martin Oil Tester.
- N. Y. State Oil Tester.
- Sartorius Specific Gravity Balance.
- Two Becker Analytical Balances.
- Gas Muffle Furnace.
- Kny Scherer Oil Tester.
- Graefe Gas Calorimeter.
- Orsat Gas Analysis Apparatus.
- Laboratory Tables, Lockers and Hoods.

#### *Industrial Chemistry Laboratory*

- One Filter Press, Type E, T. Shriver and Co.
- One Single Acting Triplex Plunger Pump, Gould's Mfg. Co.
- One Vacuum Drying Apparatus, Norman Hubbard's Sons.
- One Surface Condenser, Norman Hubbard's Sons.
- One Packard Vacuum Pump, Norman Hubbard's Sons.
- One Vacuum Evaporator, Swenson System, American Foundry and Machine Co.
- One Centrifugal, C. H. Chavant and Co.
- One Double Jar Mill, F. I. Stokes and Co.
- One Sturtevant Ore Crusher.



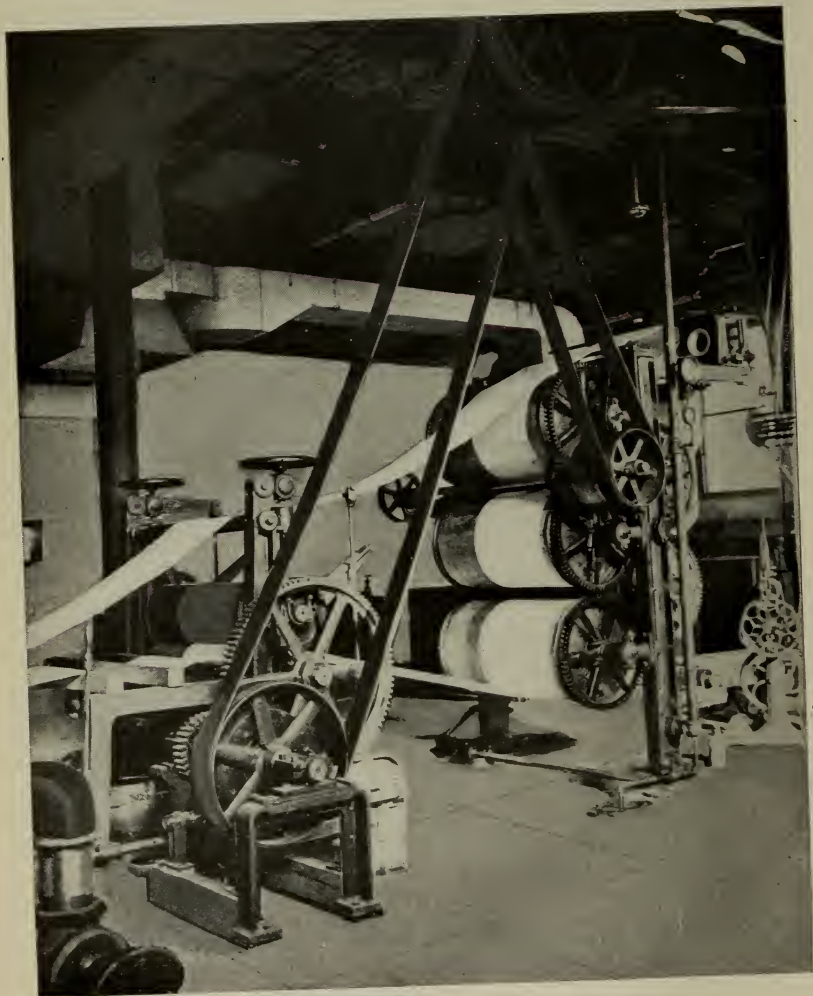
INDUSTRIAL CHEMISTRY LABORATORY

One Sturtevant Pulverizer.  
Ten Copper Steam Baths, D. H. Wilson and Co.  
One 36 in. Ventilating Fan, Mass. Fan Co.  
One Autoclave.  
Lockers and Tables.  
Power for this department is furnished through a  $7\frac{1}{2}$  h. p. 220 volt  
General Electric Co.'s motor.

### *Commercial Dyeing Laboratory*

One Kier, Atlantic Works, East Boston, Mass.  
One small Kier, fitted with E. D. Jefferson's circulating device.  
One Electrolyzer for manufacturing bleaching solutions, The National  
Laundry Machine Co., Dayton, Ohio.  
One Permutit Filter. The Permutit Co., New York City.  
One Mercerizing Machine.  
One Raw Stock Dyeing Machine, Klauder-Weldon Dyeing Machine  
Co., Yardley, Pa.  
One Yarn Dyeing Machine, Klauder-Weldon Dyeing Machine Co.,  
Yardley, Pa.  
One Jig Dyeing Machine, The Textile-Finishing Machinery Co.,  
Providence, R. I.  
One set of Drying Cans, The Textile-Finishing Machinery Co.,  
Providence, R. I.  
One Chain Dyeing Machine, T. C. Entwistle Co., Lowell, Mass.  
One Raw Stock Drying Table, Philadelphia Textile Machinery Co.,  
Philadelphia, Pa.  
One Padding Mangle, Arlington Machine Works, Arlington, Mass.  
One Hydro-Extractor, W. H. Tolhurst & Son, Troy, N. Y.  
One Experimental Dyeing Machine, The Psarski Dyeing Machine  
Company, Cleveland, Ohio.  
One Experimental Dyeing Machine, equipped for raw stock or yarns,  
Hussong Dyeing Machine Co., Croweville, N. J.  
One Sample Piece Dyeing Machine, Rodney Hunt Co., Orange, Mass.,  
equipped with an automatic temperature and pressure regulating  
apparatus made by C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.  
One Laboratory Dyeing Machine, Franklin Process Co., Providence,  
R. I.  
Seven Dye Tubs.  
One Reeves' Variable Speed Device.  
Two Trucks.  
The power for this department is supplied through a 15 h. p. 220 volt.  
Allis-Chalmers Co.'s motor.





VIEW IN COMMERCIAL DYEING LABORATORY



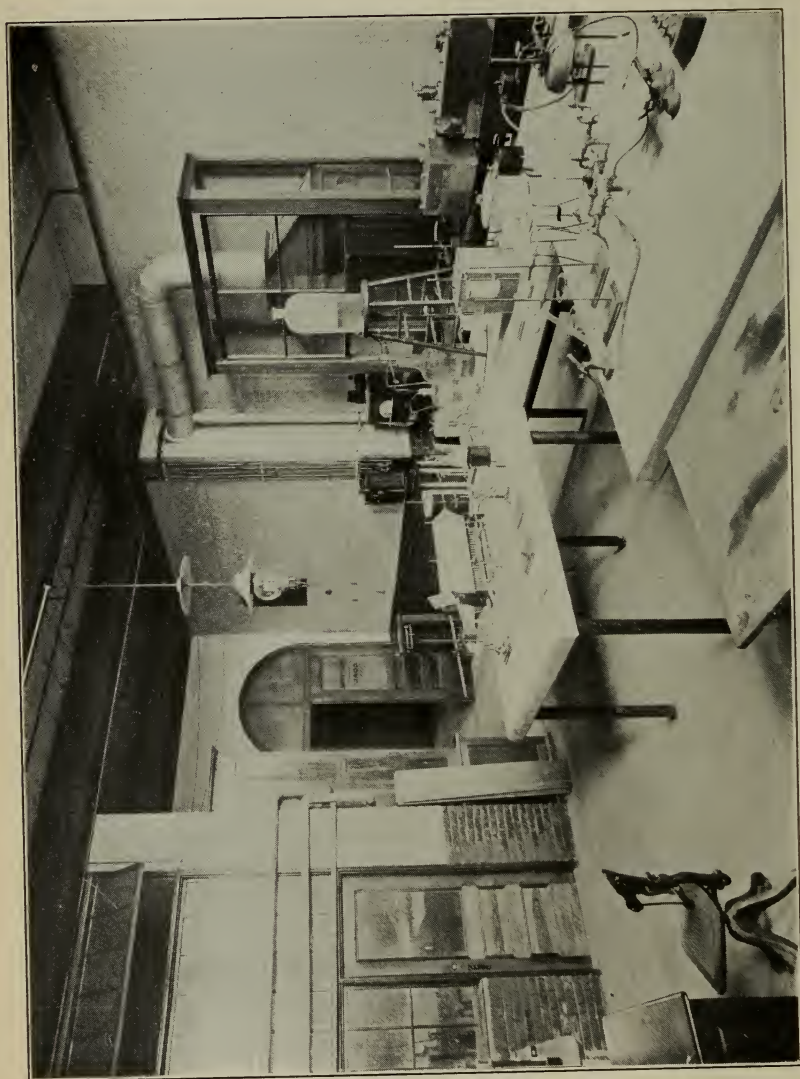
## FINISHING DEPARTMENT

### Woolen and Worsted

- One 2 string Washer, Rodney Hunt Co., Orange, Mass.
- One Fulling Mill, Rodney Hunt Co., Orange, Mass.
- One Sample Fulling Mill, James Hunter & Co., North Adams, Mass.
- One Up and Down Dry Gig, Curtis & Marble, Worcester, Mass.
- One Rolling and Stretching Machine, Curtis & Marble, Worcester, Mass.
- One Up and Down Wet Gig, Curtis & Marble, Worcester, Mass.
- One Steam Finishing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 3 burner Singeing Machine, adapted for Cotton, Silk or Worsted Goods, Curtis & Marble, Worcester, Mass.
- One Two Cylinder Double Acting Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 4 Cylinder Sanding and Polishing Machine, Curtis & Marble, Worcester, Mass.
- One Kicker Mill, James Hunter & Co., North Adams, Mass.
- One 6-4 Double Shear, Parks & Woolson, Springfield, Vt.
- One Single Shear, Curtis & Marble. Donated by Mass. Mohair Plush Co., Lowell, Mass.
- One Dewing Machine, G. W. Voelker & Co., Woonsocket, R. I.
- One 6-4 Voelker Rotary Press, G. W. Voelker & Co., Woonsocket, R. I.
- One Tentering and Drying Machine, John Heathcote, Providence, R. I.
- One Single Crabbing Machine, H. W. Butterworth & Son, Philadelphia, Pa.
- One 72 in. Woolen Napper, Davis & Furber, North Andover, Mass.
- One 32 in. Basket Hydro-Extractor, W. H. Tolhurst, Troy, N. Y.
- One A. W. C. Measuring and Weighing Machine, Parks & Woolson, Springfield, Vt.
- One Lintz & Eckhardt Cloth Numbering Machine, Improved by Durbrow & Hearne Mfg. Co., New York.
- One Steam Press for Underwear, United States Hoffman Co., Syracuse, N. Y.
- One Sewing Machine, Birch Brothers, Somerville, Mass.
- Soap tanks, perch, burling and measuring tables.
- The power for this department is supplied through a 15 h. p. 220 volt Allis-Chalmers motor.

### Cotton Finishing Machinery

- One 40 in. Inspecting and Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 44 in. No. 25 Railway Sewing and Rolling Machine, Curtis & Marble, Worcester, Mass.



FUEL AND OIL LABORATORY

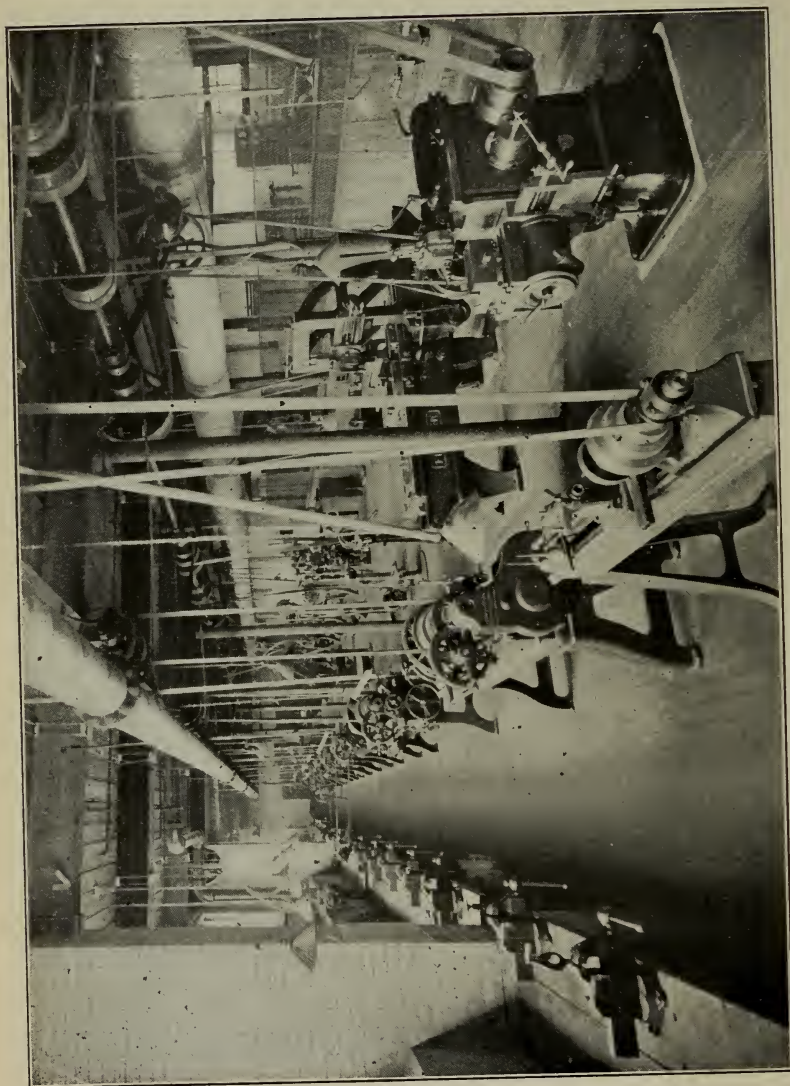
- One 44 in. Cotton Shearing Machine, Type No. 34, Curtis & Marble, Worcester, Mass.
  - One 44 in. No. 3 Steam Calender Rolling Machine, Curtis & Marble, Worcester, Mass.
  - One 40 in. Cloth Folder, Curtis & Marble, Worcester, Mass.
  - One 40 in. Winder and Measurer, Curtis & Marble, Worcester, Mass.
  - One set 44 in. Shear Blades for grinding purposes, Curtis & Marble, Worcester, Mass.
  - One 48 in. No. 4 Opening, Sewing and Re-rolling Machine, Dinsmore Manufacturing Co., Salem, Mass.
  - One No. 1 Hand Power Portable Railway Sewing Machine, Dinsmore Manufacturing Co., Salem, Mass.
  - One 40 in. 3 Roll Water Mangle, with husk and brass rolls and usual attachments, The Textile-Finishing Machinery Co., Providence, R. I.
  - One 48 in. Mycock Scutcher, for the Water Mangle, Thos. Leyland & Co., 60 India St., Boston, Mass.
  - One 40 in. Mycock Cloth Expander, for the Water Mangle, Thos. Leyland & Co., 60 India St., Boston, Mass.
  - One 40 in. 2 Roll Starch Mangle, The Textile-Finishing Machinery Co., Providence, R. I.
  - One 40 in. Upright Drying Machine with 10 copper cylinders, The Textile-Finishing Machinery Co., Providence, R. I.
  - One 16 x 24 in. Bronze Covered Stretcher, for the Drying Cans, C. A. Luther & Co., Providence, R. I.
  - One 40 in. double Bristle Stretcher, for Drying Cans, American Finishing Machinery Co., 141 Milk St., Boston, Mass.
  - One 40 in. Sprinkler, The Textile-Finishing Machinery Co., Providence, R. I.
  - One 40 in. 5 Roll Universal Calender, with chasing attachment, The Textile-Finishing Machinery Co., Providence, R. I.
  - One 40 in. Mycock Cloth Expander, for the calender, Thos. Leyland & Co., 60 India St., Boston, Mass.
  - One 40 in. Tommy Dodd Starch Mangle, H. W. Butterworth & Sons Co., Philadelphia, Pa.
  - One Direct Driven 44 in. - 50 ft. - 0 in. Vibratory Tenting Machine, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- This machine is driven separately by a  $7\frac{1}{2}$  h. p. variable speed 220 volt direct current General Electric Co.'s motor.
- The power for the rest of the department is supplied through a 25 h. p. 220 volt Westinghouse direct current motor.

## ENGINEERING DEPARTMENT

### STEAM ENGINEERING LABORATORY

The engineering laboratory contains the following equipment:

- 50 H. P. Allis-Chalmers Corliss Steam Engine (Reliance type) for experimental purposes arranged to operate condensing or non-condensing and direct connected to an Alden absorption dynamometer.



MACHINE SHOP



- Wheeler Surace Condenser (200 sq. ft. surface) with 5 in. x 6 in. x 6 in. x 7 in. combined air and circulating pump.
- 25 K. W. Kerr Steam Turbine (7 stage) direct connected to 25 K. W. Richmond Electric Co. alternating current generator and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low pressure turbine in conjunction with the Allis Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.
- 5000 gallon Pressure Tank for heads up to 300 ft. and connections for experimental work.
- Two 2500 gallon Concrete Storage Tanks.
- Complete set of Weighing and Suction Tanks on Fairbanks Standard scales.
- Deane Triplex Power Pump 4 in. x 6 in.
- One Hays Flue Gas Collector and Instruments for determination of  $\text{CO}_2$  and  $\text{CO}$ .
- One Throttling Calorimeter.
- One Separating Calorimeter.
- Schaeffer & Budenberg Mfg. Co.
- One 2 in. Centrifugal Pump made by Lawrence Machine Co. and direct connected to a 3 H. P. General Electric Co. 220 volt induction motor.
- Miscellaneous equipment of Pressure, Vacuum and Draft Gages, Thermometers, etc.
- Clayton Air Compressor (belted type) 6 in. x 6 in.
- Centrifugal Pump, 2 inch (belted type), Lawrence Machine Company, Lawrence, Mass.
- Two Sturtevant Fan Blowers for experimental work.
- Metropolitan Injector. 3-4 inch.
- Differential Transmission Dynamometer.
- Variable Speed Transmission.
- One dead weight tester for calibrating pressure gages.
- One vacuum pump and mercury column for calibrating vacuum gages.
- Two Steam Engine Indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types).
- One Gas Engine Indicator. Speed Counters and Tachometers. Apparatus for investigating the rate of heat transmission for steam heating coils and condenser tubes.
- All steam supplied to the laboratory passes through a 4 inch horizontal Cochrane steam separator to insure dry steam for experimental work.
- Buff & Buff Engineers Transit.
- Philadelphia Level Rod.
- Apparatus for testing friction and slip of belts and pulleys.

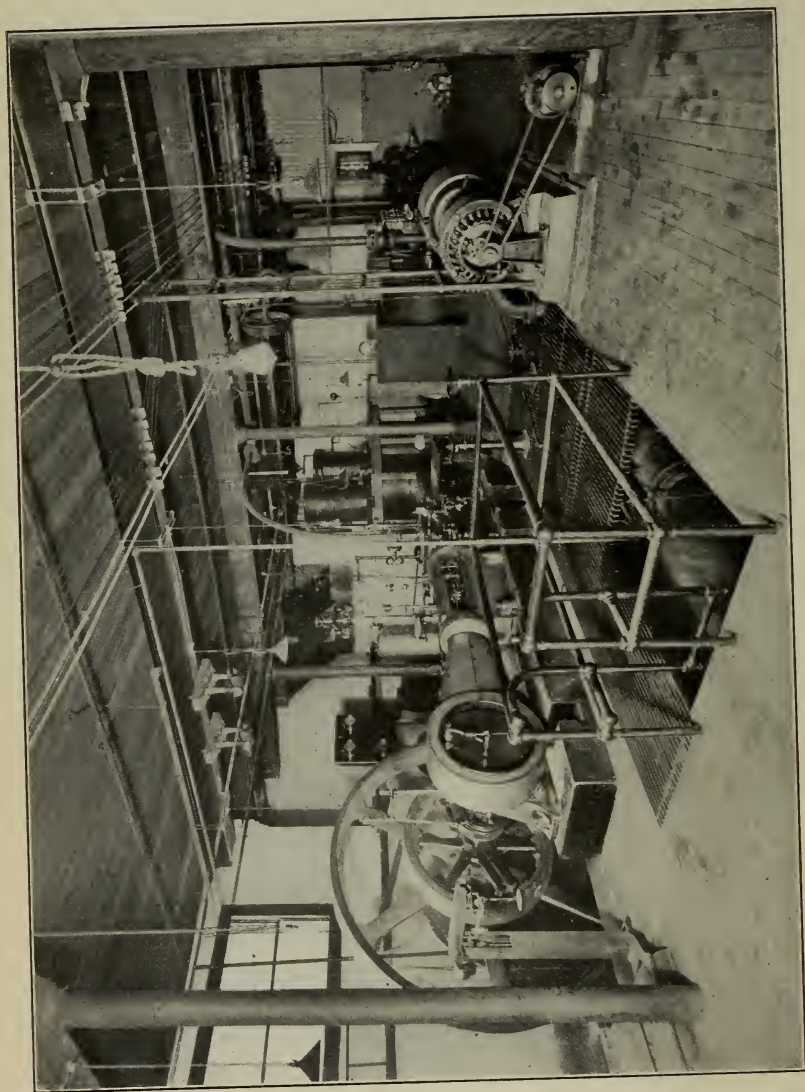




MECHANICAL DRAWING ROOM

Standard Marine Finished Slate Switchboard made up of:

- One Westinghouse A. C. Generator Panel 25 K. W.
- One Westinghouse A. C. Generator Panel 15 K. W.
- One Circuit Panel for lights and motors.
- One 15 K. V. A. 220 Volt 3-Phase 60 Cycle Synchronous Motor.
- One 24 H. P. 220 Volt D. C. Allis-Chalmers Co. Motor.
- One 10 H. P. 220 Volt D. C. General Electric Co. compound wound motor.
- One 7.5 H. P. 220 Volt 3-Phase 60 Cycle General Electric Induction Motor.
- One 10 H. P. 220 volt 3-Phase Induction Motor, General Electric Company.
- One 4 H. P. General Electric Dynamometer which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220 Volt 60 cycle 3-phase on one side and delivers or receives 220 Volt direct current.
- One 5 K. W. 220 Volt 440 Volt Transformer.
- Westinghouse Portable Polyphase Wattmeter with current transformers.
- Three General Electric A. C. Wattmeters.
- Two General Electric A. C. Ammeters.
- One General Electric A. C. Voltmeter.
- Two 250 Volt D. C. Weston Portable Voltmeters.
- One Weston D. C. Portable Millivoltmeter. 2 ampere and 20 ampere shunts for use with the above instrument.
- One 150 amp. D. C. Weston Portable Ammeter.
- Two Weston Model 45 D. C. Ammeters.
- Two Weston Model 260 D. C. Ammeters.
- One Weston Model 260 D. C. Voltmeter.
- One Thompson 50 ampere 2 wire 220 volt recording Wattmeter, General Electric Co.
- One Weston Laboratory Standard Voltmeter with multiplier to 600 volts.
- One Small Wheatstone Bridge with D'Arsonval Wall Galvanometer.
- One Simple Galvanometer
- One Leeds & Northrup Potentiometer No. 7551.
- One Wall Galvanometer L. & N. 2210 D'Arsonval type.
- One Wheatstone Bridge L. & N. No. 4725 A. with D'Arsonval Galvanometer L. & N. tripod type.
- One Slide Wire Bridge, Leeds and Northrup.
- One Portable Galvanometer No. 2323, Leeds & Northrup.
- One Ohmmeter, Leeds & Northrup.
- One Electro-Dynamometer, Leeds & Northrup.
- One Weston Standard Cell.
- Two Tachometers.



ENGINEERING LABORATORY

- One Potential Phase Shifter made by States Co., Hartford, Conn.
- One Standard Leeds & Northrup Photometer with Lummer-Brodhun Screen Compound Rotator and Rotating Sector, Screens, etc.
- One Macbeth Illuminometer, Leeds & Northrup.
- One Esterline Portable Curve Drawing Wattmeter designed for Polyphase A. C. or Direct Current power measurements. Mechanism to vary speed of paper.
- Two Hand Feed Arc Lamps for stereopticons.
- Resistance boxes of various sizes and other apparatus necessary for commercial testing of lamps, motors, etc.
- Two cell storage battery for constant voltage current supply.
- An Exhibition Board containing samples of the Chloride-Exide Storage Battery Plates donated by the Electric Storage Battery Co. of Philadelphia.
- Miscellaneous apparatus for experiments in Mechanics, Heat, Light, Sound and Electricity.

### Machine Shop

The equipment of the machine shop is as follows:

- Four Standard Engine Lathes, 13 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.
- Three Standard Engine Lathes, 14 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.
- One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from F. E. Reed Co., Worcester, Mass.
- One Engine Lathe, 18 inch swing, 10 ft. bed, from Flather & Co., Nashua, N. H.
- One Engine Lathe, 18 inch swing, 6 ft. bed, from Champion Tool Works, Cincinnati, Ohio.
- One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from S. H. Putnam Sons, Fitchburg, Mass.
- Five Speed Lathes, 17 inch swing, 5 ft. bed, from J. G. Blount, Everett, Mass.
- One No. 1 Universal Milling Machine, with all three feeds automatic, from Kempsmith Mfg. Co., Milwaukee, Wis.
- One 24 in. x 24 in. 6 ft. Planer, from the Mark Flather Planer Co., Nashua, N. H.
- One 23 inch Upright Drill with back gears and power feed, from J. E. Snyder & Son, Worcester, Mass.
- One 14 inch Single Sensitive Drill from the Stanley Mfg. Co., Lawrence, Mass.
- One No. 1 Universal Grinder from Landis Tool Co., Waynesboro, Penn.
- One 20 inch Wet Tool Grinder from J. G. Blount, Everett, Mass.
- One 12 inch, Two Wheel, Dry Grinder from J. G. Blount, Everett, Mass.





ATHLETIC FIELD AND SCHOOL BUILDINGS

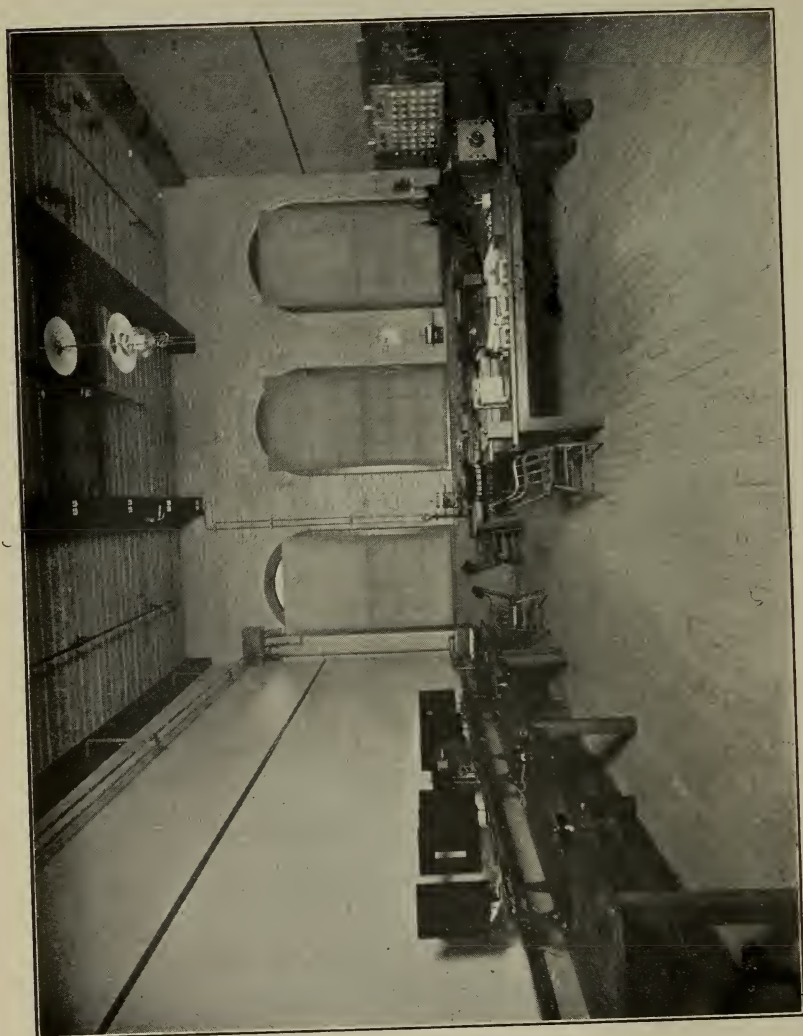


- One American Twist Drill Grinder from the Heald Machine Co., Worcester, Mass.
  - One Type 1 B Portable Electric Grinder from the Cincinnati Elec. Tool Co., Cincinnati, Ohio.
  - One 30 inch Grindstone and Frame from the Athol Machine Co., Athol, Mass.
  - One Single Spindle Centering Machine from D. E. Whiton Machine Co., New London, Conn.
  - One 15 inch Shaper from Potter & Johnson, Pawtucket, R. I.
  - One Power Hack Saw from the Fairbanks Co., Boston, Mass.
  - One Cold Saw from John T. Burr & Son, Brooklyn, N. Y.
  - Two Blacksmith Forges, Anvils and Tools are also provided.
  - One Gas Oven for hardening and tempering tools.
  - One Eureka Metal Power Saw. Manning, Maxwell & Moore.
  - One Type "C C" Electric Drill. Cincinnati Electric Tool Co.
  - One Universal Milling Attachment for Kempsmith Milling Machine, Taylor Machinery Co.
  - One Hisey Type "B"  $\frac{1}{2}$  H. P. Tool Post Grinder. Taylor Machinery Co.
  - One No. 2 Cory Bench Straightener. Manning, Maxwell & Moore.
  - One No. 3 Universal Cutter and Reamer Grinding Machine. Brown and Sharpe.
- These tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.
- A well equipped tool room contains a selected stock of the best makes of small tools such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc. This year there has been a substantial addition of tools which experience has found are required.
- The following wood working tools are also provided in addition to benches for pattern making:—
- One Pattern Maker's Lathe, 16 in. swing, 8 ft. bed, from Fay & Scott, Dexter, Me.
  - One 32 in. Band Saw from the Crescent Machine Co., Leetonia, Ohio.
  - One Iron Single Saw Bench, from the Crescent Machine Co., Leetonia, Ohio.
  - One Double Saw Bench.
  - One 12 in. Buzz Planer from W. W. Carey, Lowell, Mass.
- The power for this department is supplied through a 10 h. p. 220 volt direct current Allis Chalmers Co.'s motor.

#### POWER, LIGHT, HEAT AND VENTILATING PLANT

In the new Power House completed in 1913, there is located the main power generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:

Two 250 h. p. Heine Water Tube Boilers equipped with Perfection grates.



ELECTRICAL MEASUREMENT LABORATORY

One 300 H. P. Aultman and Taylor Horizontal Water Tube Boiler equipped in U. S. Rocking Grates.

One Knowles Boiler Feed Pump 6 x 4 x 6

One Deane Boiler Feed Pump 6 x 4 x 6.

All feed water is heated and measured by 30000 lbs. Cochrane Metering Open Feed Water Heater which is provided with a Lea Recorder and a Cochrane Oil Extractor. Harrison Safety Boiler Works, Philadelphia, Pa.

In the Engine Room are located:

One Payne 14 x 14 Automatic High Speed Engine 125 H. P. Direct connected to 75 K. W. 220 Volt D. C. Bullock Generator.

One  $9\frac{1}{2}$  x  $11\frac{3}{4}$  Nash Gas Engine of 50 H. P. four cycle type, with speed regulating clutch and a "hit and miss" governor. Direct connected to a 30 K. W. 220 Volt D. C. Bullock Generator.

One Steam Driven Ingersoll-Rand 8 x 8 Air Compressor, for use with Tarbo Heads, installed in the French Spinning Department by the G. M. Parks Co., Fitchburg, Mass.

One  $5\frac{1}{2}$  x 6 Motor Driven Air Compressor with 20 cu. ft. storage tank for use in starting Nash Gas Engine.

One Cross Oil Filter.

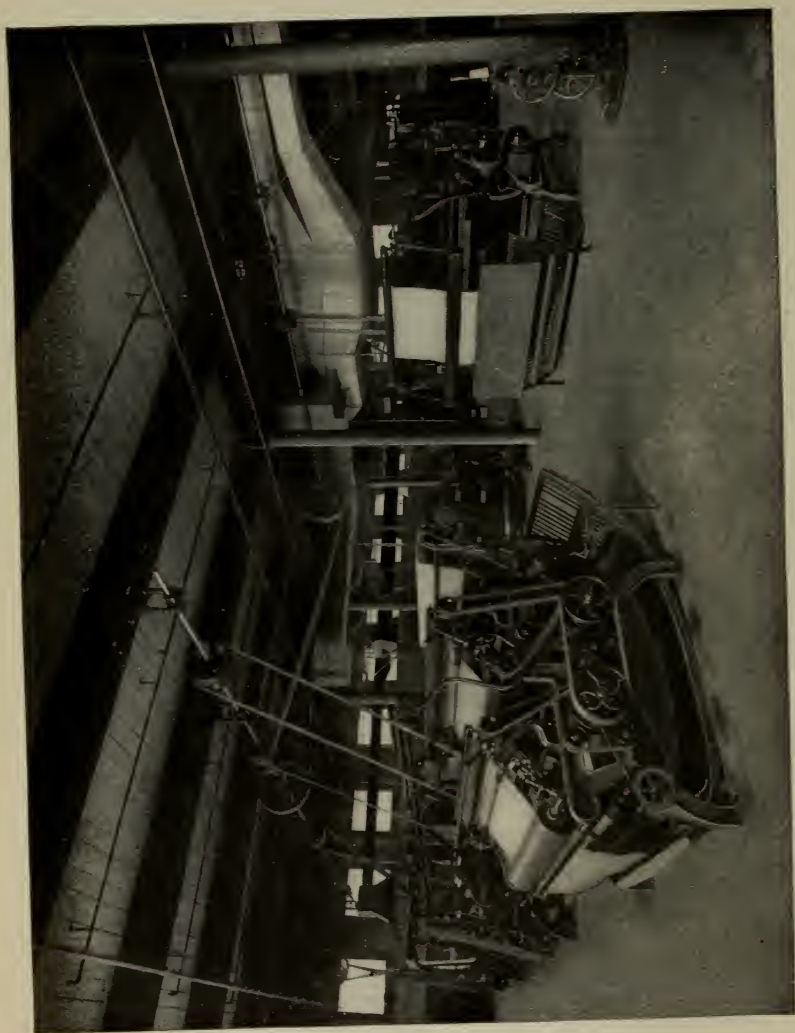
The station switchboard is of Marine Finished Slate 90 inches in height and consists of two generator panels and one circuit panel from which circuits supplying approximately 1200 - 16 candle power equivalent lamps and over 270 H. P. in motors, located in various departments of the school.

The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation and by means of the Sturtevant Double Duct Heating and Ventilating System located in the basement of Southwick Hall and by the Sturtevant Fan and Heater located in the basement of Kitson Hall. Direct driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.

The Humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles Triplex 4 x 4 power pump and tank.

## ATHLETICS

Through the generosity of Mr. Frederick Fanning Ayer, the school has been provided with a Campus and Athletic Field of about three acres. This has been carefully graded and laid out for base ball, foot ball and track athletics. Bleachers have been provided for use at the out-of-door games.



WOOLEN AND WORSTED FINISHING DEPARTMENT

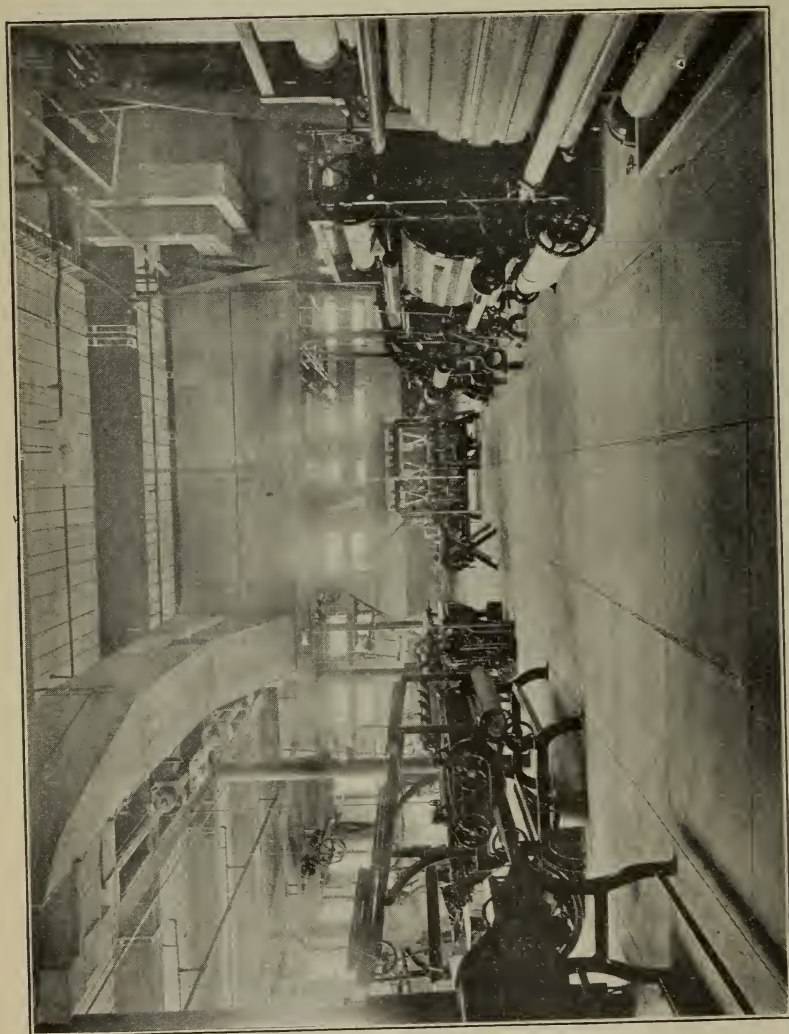
To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

On the upper floor of the Falmouth Street Building there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb bells, Indian clubs, a set of travelling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest, all candidates for the various athletic teams are obliged to pass a satisfactory physical examination given by the Medical Adviser of the school.





FINISHING DEPARTMENT

# Day Classes

## ENTRANCE REQUIREMENTS

### Degree Courses

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

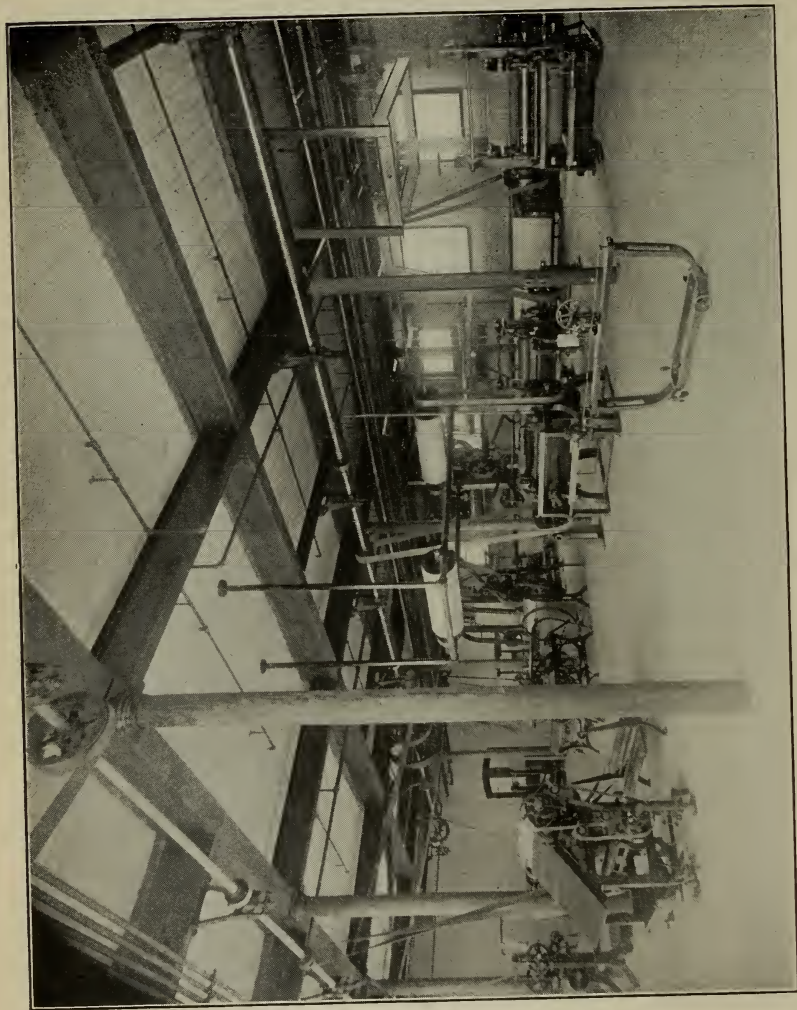
A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

Required Subjects	POINTS
Plane Geometry	1
Algebra A	1
Algebra B	1
Elementary German A (two years) or Elementary French A (two years)	2
English	3
History	1
	<hr/>
	9

Elective Subjects	POINTS
Physics	1
Chemistry	1
Solid Geometry	1
Trigonometry	1
Mechanical Drawing	1
Mechanic Arts	1
History	1
Elementary French or Elementary German	} Two years 2
Advanced French or German (one year in addition to require- ments of Elementary French A or Elementary German A	
Spanish	1
English	1

An applicant may also be admitted on the basis of entrance examinations in which case he must pass sufficient number of the required subjects to make nine points and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.



COTTON FINISHING

## Diploma Courses

Candidates for admission to the Diploma Courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four year course in a High School or Academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of Algebra, one year of Plane Geometry and three years of English. An applicant is advised to complete both Algebra A and B before entering.

The subject matter covered should be the same as described under the required subjects for the degree Courses with the exception of German, French and Arithmetic, the requirements for which are given specifically under Elementary German B, Elementary French B and Arithmetic.

Subjects	POINTS
Algebra A	1
Algebra B	1
Plane Geometry	1
English (Three Years)	3
English (Additional Year)	1
German (Elementary One Year)	1
French (Elementary One Year)	1
History {	Mediaeval and Modern
	English
	American
	1
Arithmetic	1

## ENTRANCE EXAMINATION

All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examinations for admission to the diploma and degree courses will be held as follows:

Tuesday, June 13, 1916; Tuesday, September 5, 1916; Tuesday, June 12, 1917:

Algebra A and B	9 A. M. to 11 A. M.
History	11 A. M. to 1 P. M.
English	2 P. M. to 4 P. M.

Wednesday, June 14, 1916; Wednesday, September 6, 1916; Wednesday, June 13, 1917:

Plane Geometry	9 A. M. to 11 A. M.
German or French	11 A. M. to 1 P. M.
Arithmetic	2 P. M. to 4 P. M.

Applicants who wish to take the degree courses and cannot enter upon certificate must send to the Principal not later than June 9, for June examinations and September 1, for Fall Examinations, a list of the subjects





VIEW OF MANUFACTURED MATERIALS



which they offer for examination. The dates for these examinations will be in accordance with the above schedule and special dates will be assigned for the examination in elective subjects.

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

## **REQUIRED SUBJECTS FOR ENTRANCE**

### **Algebra**

A. Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equation of either numerical or literal quantities, radicals, involution, and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

B. Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

### **Plane Geometry**

The usual theorems and constructions of good text books including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

### **Arithmetic**

#### **(Diploma Course Requirement)**

This subject should be pursued for two reasons: that the applicant may acquire familiarity with the fundamental principles and that he may acquire accuracy in solution. Special attention should be given to problems in percentage, interest, discount, square and cube root, alligation, ratio and proportion, Metric System.

### **English**

As secondary schools are following to a greater extent than heretofore, the requirements of the College Entrance Examination Board, it is recommended that the applicant to this school conform to the suggestions of this Board relative to English composition and Literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon



LIBRARY

subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature and to test this examination questions will be based on the books adopted by the National Conference on Uniform Entrance Requirements. Any course of equivalent amount if made up of standard works will be accepted.

### Modern Languages

#### REQUIREMENTS FOR DEGREE COURSES

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction that greater care may be used in translation.

#### *Elementary German A*

The entrance examination is composed of two parts, both taken, however, at the same time.

- (a) Translation of simple German prose into good idiomatic English.
- (b) Questions to test proficiency in grammar and simple English sentences to be rendered into German.

The requirements include the declension of articles, adjectives, pronouns, and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs and the elementary rules of syntax and word order.

Among the texts suggested for prospective candidates are:

- Anderson's *Marchen*.
- Arnold's *Fritz auf Ferien*.
- Baumbach's *Die Nonna* and *Der Schwiegersohn*.
- Gerstacker's *Germelshausen*.
- Heyse's *L'Arrabbiata*.
- Hillern's *Hoher als die Kirche*.
- Jensen's *Die braune Erica*.
- Storm's *Immensee*.
- Zschokke's *Der zerbrochene Krug*.

#### *Elementary French A*

The entrance examination is composed of two parts, both taken, however at the same time.

- (a) Translation of simple French prose into good idiomatic English.
- (b) Questions to test proficiency in grammar and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronoun; and the simpler uses of the conditional and subjunctive.

Among the texts recommended for prospective candidates are:

About's *Le roi des montagnes*.  
Bruno's *Le tour de la France*.  
Daudet's *Easier short tales*.  
De la Bédollière's *La mère Michel et son chat*.  
Erckmann — Chatrian's *Madame Thérèse*.  
Foa's *Contes Biographiques*.  
Halévy's *L'Abbé Constantin*.  
Merimée's *Colomba*.  
Extracts from *Michelet*.  
Sarcey's *Le siège de Paris*.  
Verne's *Le tour du monde en quatre-vingts jours*.  
Molot's *Sans famille*

Note:—Students who have pursued two years of Elementary French as well as two years of Elementary German may present one subject to cover 2 points in the required subjects and the other to cover 2 points in the elective subjects.

#### REQUIREMENTS FOR DIPLOMA COURSES

##### *Elementary French B*

Applicants who enter for one of the three year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar and be able to translate simple French prose into good idiomatic English, also to translate into French, English sentences based on the French given for translation.

##### *Elementary German B*

Applicants who enter for one of the three year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

#### History

Applicants may offer a preparation of American History, English History or Mediaeval and Modern History.

In American History applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be pre-



pared to consider also questions requiring an elementary knowledge of Civil Government as well as historical facts connected with the growth of this country up to the present time.

For the subject of English History or Mediaeval and Modern History the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

## **ELECTIVE SUBJECTS**

### **History**

If the applicant can present all three or any two branches of history specified he may include one as a required subject and the others in the list of elective subjects.

### **Physics**

The applicant should be familiar with the fundamental principles of Physics, particularly those considered under the headings of Mechanics, Heat, Light, Electricity and Magnetism. Text book instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in this subject if he has not been able to carry on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his note-book together with the certificate from the teacher under whom the work was performed.

### **Chemistry**

Applicants must show evidence of their familiarity with the rudiments of Chemistry. Any course given in a secondary school organized to present instruction by means of text book or lecture together with co-related laboratory work will be considered as covering the requirements. The applicant's note book with his original notes including description of experiments, apparatus used, reactions, observations, and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the note-book.

### **Solid Geometry**

The usual theorems and constructions of good text books including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

### **Trigonometry**

The usual courses of instruction covered by the standard text books



on Plane and Spherical Trigonometry will prepare an applicant sufficiently to meet this requirement.

### **Mechanical Drawing**

The applicant must have pursued such a course in Mechanical Drawing that he will be familiar with the usual Geometrical Construction Problems, Projection of Points, Lines, Planes, and Simple Solids.

Importance is laid not only upon the accuracy with which the work is performed but upon the general arrangement, appearance, and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

### **Mechanic Arts**

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfillment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.

### **Advanced French or German**

In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under Elementary French or German, they may offer the additional year as an elective.

### **English**

In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the additional year's work as one of his elective subjects.

### **Spanish**

Students offering Spanish should be familiar with elementary grammar, the common irregular verbs and be able to translate simple Spanish to English or English to Spanish. A preparation equivalent to three periods per week for two years will be acceptable.

## **GENERAL INFORMATION**

### **Preparation**

Particular stress should be laid upon a thorough grounding in mathematics including Algebra, Arithmetic and Plane Geometry, as these form the basis upon which the work of this school rests. While Solid Geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including Physics and Chemistry, serves to prepare the student's mind for the higher branches of these subjects and their appli-

cation, but neither will be considered as the equivalent of the courses in these branches given in the school.

### Advanced Standing

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained, they may elect such further work as their preparation will permit.

### Attendance Card

At the beginning of each term all students must fill out and file with the Principal on blank forms which are provided, a formal application for such subjects as are required in his course and for which he is sufficiently prepared, subject to the approval of the Principal. When an attendance card is once approved, no change can be made except through the Principal.

### Application Blanks

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants whether entering upon certificate from a secondary school or presenting themselves for examination.

### Fees

The fee for the day course is \$105 per year for residents of Massachusetts, with the exception of the Textile Engineering and Chemistry and Dyeing Courses, for which the fee is \$130 for Second, Third and Fourth Year students. For First Year students taking these courses the first term fee is \$63 and the second term fee \$54.50. For non-residents the fee for all courses is \$155 per year. The fee for students from foreign countries is \$305 per year.

Three-fifths of the fee is charged for a single term. The first term's tuition is payable on or before October 10, the balance on or before February 10, of each year. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the Trustees.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the Principal for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.

For all first year students a minimum deposit of \$20 is required to cover the cost of breakage in the chemical laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry or Dyeing Laboratories a deposit of \$20 for the first term and

\$20 for the second term is required. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

### Examinations

Intermediate examinations are held every five weeks and these serve to inform the student concerning his standing and the progress made.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first term subjects are held in May and examinations for students conditioned in the Final Examinations are held in September following.

If a student fails to clear a condition at the time appointed, he will be required to repeat or drop the subject; and he cannot be admitted to subjects dependent thereon.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.

### Records and Reports of Standing

Twice during each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

### Thesis

All candidates for the degree of the school must file with the Principal not later than May 15, a report of original investigation, or research, written on a good quality of paper, 8 x 10 inches, with one inch margin at left, and 1-2 inch at right of each page; such thesis to have been previously approved by the head of the department in which it is made.

For all candidates for the diploma this requirement will be optional on the part of the school.

### Graduate Course

Graduates of technical courses of other schools are invited to communicate with the Principal with reference to special courses in the tex-

tile studies. Previous training in the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

### **Partial Courses**

While it is assumed that in general every student will pursue some one of the regular courses it is recognized that there may be some who because of special vocations or limited time desire to obtain instruction in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparation see page 107.

Applicant must present satisfactory evidence by examination or otherwise that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in Textile Design, Decorative Art, Cloth Analysis, Weaving and Finishing. While no specified limit is given for this course the usual time has been three years. It is expected that students taking this course will devote all of the regular school session to these subjects and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

### **Special Awards of Merit**

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:

First:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in First Year Chemistry.

Second:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in First Year Chemistry.

Third:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth:—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best Thesis preparatory to graduation.

The above mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.



### **Degrees**

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in Textile Engineering. The degree of Bachelor of Textile Dyeing will be awarded for the completion of the four-year course in Chemistry and Textile Coloring.

### **Diploma**

For the present the diploma of the School will be awarded upon the satisfactory completion of any one of the regular courses, covering not less than three years, except where entrance is to advanced standing. In such cases at least one year's attendance is required.

### **Medals of Honor**

The National Cotton Manufacturer's Association offers annually a medal to that member of the third year class who shall have during his course attained the highest standing in the specified subjects required by the vote of the association.

### **Attendance**

All regular students must attend all exercises of their course. Special students must attend exercises as per their Tabular View.

In case of absence explanation must be made to the instructor or the Head of the Department. The effect of such absence upon a student's standing in the respective study will rest with the Head of the Department subject to the approval of the Principal.

If a student absents himself from any department to such an extent that in the mind of the Head of the Department he is endangering his standing, he shall be reported to the Principal.

If he continues his non-attendance, he may be required to drop the subject and repeat it the following year.

If he is reported from several departments on account of non-attendance, he may be suspended from the school for the remainder of the school year.

### **Conduct**

Students are required to return to the proper place all instruments or apparatus used in experimental work and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents, or irregularities of any kind must be reported immediately to the head of the department, or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentlemanly conduct or general insubordination, are considered good and sufficient reasons for the immediate suspension of a student, and a report to the Trustees for such action as they deem necessary to take.

It is the aim of the Trustees so to administer the discipline of the



school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the Trustees as a most serious offense and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Any student who violates these provisions will be immediately suspended by the Principal and the case reported at the following meeting of the Trustees for action.

Young men abounding in vitality when suddenly cut loose from home and established social environment to acquire an education at a residential school, need especially the careful direction of more mature minds in the formation of new associations. The management of all residential schools are aware that this fact is the cause of considerable anxiety on the part of parents and guardians. The responsibility thus placed upon those under whose care these pupils are committed is profoundly recognized.

The public schools are for boys and girls, the college for youth, the higher technical and profession schools of medicine, law, engineering, etc., are for men. It is now fully recognized that the fundamental idea of the general educational system, from the kindergarten to the college inclusive, should be the development and establishment of character, and it is therefore expected that those entering the technical schools will have made some progress in self-respect, self-denial and self-control. They enter substantially upon their life work when they matriculate at the higher technical schools and may placed on their honor as to conduct and not be subject to an irritating and humiliating system of espionage outside of school hours.

In place of such espionage it is the policy of technical schools to rely mainly upon the discipline of the work of the course in connection with facilities for physical exercise in the various athletic games and sports, for which ample provision has been made at this school.

Pupils often err in conduct from thoughtlessness and lack of experience rather than through wilfulness, and unconsciously fall into bad habits because of the lack of intelligent warning and instruction. For this reason, it is proposed to give thorough instruction by lectures, covering the subjects of hygiene, the preservation of physical vigor, morals, thrift and the duties of citizenship. A careful scrutiny will also be maintained by the instructing staff in order to detect in the students any tendency of relaxation in the work or attendance, and all reasonable efforts will be made to maintain a high standard of scholarship and morals.

### Library

The school library is supplied with leading textile books and with works dealing with science, art or industries allied to the textile trades. The leading textile papers are kept on file.

### Sessions

The regular school sessions are in general from 8.30 a. m. to 12.30 p. m., and from 2 to 4.30 p. m., except Wednesdays and Saturdays when there is no session of the school in the afternoon. On Saturday afternoons the buildings are closed.

A tabular view designates the hours at which the various classes meet. This is rigidly adhered to and the student is marked for his attendance and work as therein scheduled.

### Residence and Expenses

Students from a distance, requiring rooms and board in the city, may if they desire, select the same from a list which is kept at the School. The cost of rooms and board in a good district is from \$6.50 per week upwards.

All raw stock and yarn provided by the School, and all the productions of the School remain, or become, the property of the Trustees, except by special arrangement, but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the Trustees may retain in the school such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. Special keyless padlocks are provided and the student is required to make a deposit of 75 cents. At the end of year 50 cents will be returned if the locker and lock are surrendered in good condition.

No books, instruments, or other property of the school are loaned to the students to be removed from the premises except by special permission.

### Awards

Gold Medal, Paris Exposition, 1900, for general excellence. A special Medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American Medal awarded to the School, 1901. Gold Medal, Louisiana Purchase Exposition, 1904, Gold Medal, Lewis and Clarke Centennial Exposition, 1905. Medal of Honor from Panama-Pacific International Exposition, 1915.

### Bulletins and Catalogues

All students registering and paying the regular fee for the course selected are entitled to the Bulletins and Catalogues when issued.

## Courses of Instruction

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Since its establishment, the Lowell Textile School has offered courses, each of which extends over a three year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work a better preparation must be demanded of the applicant for entrance.

Nevertheless it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position to devote four years to scholastic preparation, and for these the regular three year courses are offered.

These courses are designated as:—

Cotton Manufacturing.

Wool Manufacturing.

Textile Design (General Textile Courses)

Textile Engineering.

At the completion of any one of these the regular diploma of the school is awarded.

In general it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

For those who desire and who have the proper entrance qualifications to pursue the more advanced work in Textile Engineering, and Chemistry and Textile Coloring, four-year courses are offered at the completion of which the degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Dyeing (B. T. D.) are conferred.

Three options are offered in the Engineering Course, viz: General Textile, Cotton Manufacturing, or Wool Manufacturing. Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of Textile Chemistry and Textile Engineering. It is maintained that for one to be successful in either of these important branches of industry, a training is required as thorough and broad as that for any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by over stimulation of the technical development.

### COURSES FOR WOMEN

Although all classes are open to women the courses which have appealed especially to their tastes have been Textile Designing and Decorative Art. Some have pursued courses in Chemistry and have added to their work in Design some instruction in Power Weaving and Finishing. These special courses have in general been followed for three years and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

As the school work is made special to meet the needs of each case, no prescribed course of study is given in this catalogue. Inquiries should be made of the Principal.



## Courses

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 107.

The departments are indicated as follows:

Textile Engineering	B	Cotton Yarns	F
Chemistry and Dyeing	C	Woolen and Worsted Yarns	G
Textile Design and Power		Finishing	H
Weaving	D	Physical Culture	I
Languages and History	E		

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

### FIRST YEAR

#### FIRST TERM

(*Common to all courses*)

	Hours of Exercise
Mechanism B-3	60
Mechanical Drawing B-7	75
Mathematics B-1	45
Textile Design D-1	75
Elementary Chemistry C-1	150
English E-1	30
Elementary German E-2 or Elementary French E-4	30
Physical Culture I-1	30

#### SECOND TERM

	Course VI-4	Course IV-4
Mechanism B-3	45	45
Mechanical Drawing B-8—B-9	90	30
Mechanical Laboratory B-6	37	—
Mathematics B-1	45	30
Textile Design D-1	60	30
Elementary Chemistry C-1	75	75
Cotton Yarn F-1 or Wool Yarn G-1	60	—
English E-1	30	30
Elementary German E-2 or Elementary French E-4	38	30
Physical Culture I-1	30	30
Qualitative Analysis C-2	—	180
Stoichiometry C-3	—	30

For second term subjects in courses I, II and III see pages 93, 95, 105.



### COURSE 1-3.—COTTON MANUFACTURING

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The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloth or allied industries and who wish to devote but three years to the school work.

During the first term, the studies are common to all courses and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry and hand loom weaving assists in illustrating the principles of textile design. At the commencement of the second term instruction in the preliminary processes of yarn manufacturing is given.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry followed by instruction in textile chemistry and dyeing, including a short course in the dyeing laboratory.

The work in mechanism serves as a basis for all future machine and mechanical work and is followed by steam engineering, electricity, hydraulics and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in drafting.

The course in textile designing, cloth analysis, and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. There is also a course on the finishing of cotton fabrics which is given by lectures and laboratory work.

For detailed description of the subjects see page 107.

# COURSE I-3.—COTTON MANUFACTURING

(For First Term see page 91)

## FIRST YEAR

### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 90	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 105	English	E-1 30

## SECOND YEAR

### FIRST TERM

Cotton Yarn Manufacture	F-1 240	Machine Drawing	B-10 30
Textile Design	D-2 60	Steam Engineering	B-12 45
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing	C-9 30	Physics	B-11 30
		Industrial History	E-6 15

### SECOND TERM

Cotton Yarn Manufacture	F-1 180	Machine Drawing	B-10 30
Textile Design	D-2 60	Strength of Materials	B-21 30
Power Weaving	D-9 67	Physics	B-11 45
Textile Chemistry and Dye- ing	C-9, 11 83	Industrial History	E-6 15

## THIRD YEAR

### FIRST TERM

Cotton Yarn Manufacture	F-1 158	Power Weaving	D-10 165
Knitting	F-2 30	Cotton Finishing	H-2 67
Textile Design, Cloth Con- struction	D-6, 7 30	Electricity	B-20 15
Hydraulics	B-13 15	Mill Engineering	B-17 30

### SECOND TERM

Cotton Manufacture	F-1 225	Mill Engineering	B-17 45
Knitting	F-2 30	Power Weaving	D-10 98
Textile Design, Cloth Con- struction	D-6, 7 45	Cotton Finishing	H-2 67
		Thesis	

### COURSE II-3.—WOOL MANUFACTURING

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The course of Wool Manufacturing is arranged for those who contemplate a career in the manufacture of woolen or worsted fabrics and can devote but three years to the school work. It includes instruction and all of the varied processes employed in adapting the wool fibre to cloth, namely,—sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student commences work in the Woolen and Worsted Laboratory, and through systematic steps becomes acquainted with the machines employed in the first steps of yarn manufacturing. At the same time lectures are given upon the many kinds of wool, variation in quality, grades, uses, etc., as influenced by the locality where grown. This is followed by practical work on the sorting table.

The second and third years cover spinning of woolen yarn and worsted yarn by the Bradford and French systems, also the manufacture of tops, including combing, gilling and back washing. Scouring and carbonizing are taken up in detail by lectures and by practical work.

The general chemistry of the first year is followed by textile chemistry and dyeing in the second year. This includes a short course in the Dyeing Laboratory.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woolen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years and includes mechanical drawing, properties of saturated steam, electricity and hydraulics. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill design and construction are considered. A short course covering methods employed in the testing of fibres, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 107.

## COURSE II-3.—WOOL MANUFACTURING

(For First Term see page 91)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 90	Physical Culture	I-1 30
Wool Yarn Manufacture	F-1 105	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Woolen and Worsted Yarn		Machine Drawing	B-10 30
Manufacture	G-1 240	Steam Engineering	B-12 45
Textile Design	D-3 60	Weaving Mechanism	B-5 30
Power Weaving	D-9 30	Physics	B-11 30
Textile Chemistry and Dye- ing	C-9 30	Industrial History	E-6 15

#### SECOND TERM

Woolen and Worsted Yarn		Machine Drawing	B-10 30
Manufacture	G-1 180	Strength of Materials	B-21 30
Textile Design	D-3 60	Physics	B-11 45
Power Weaving	D-9 67	Industrial History	E-6 15
Textile Chemistry and Dye- ing	C-9, 11 83		

### THIRD YEAR

#### FIRST TERM

Woolen and Worsted Yarn		Power Weaving	D-10 187
Manufacture	G-1 128	Woolen and Worsted	
Knitting	F-2 30	Finishing	H-1 75
Textile Design, Cloth Con- struction	D-6, 7 30	Electricity	B-20 15
Hydraulics	B-13 15	Mill Engineering	B-17 30

#### SECOND TERM

Woolen and Worsted Yarn		Mill Engineering	B-17 45
Manufacture	G-1 157	Power Weaving	D-10 98
Knitting	F-2 68	Woolen and Worsted	
Textile Design, Cloth Con- struction	D-6, 7 67	Finishing	H-1 75
		Thesis	



### COURSE III-3.—TEXTILE DESIGN

(General Textile Course)

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The general course in Textile Design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn and of woollen and worsted yarns from the fleece through the varied processes of manufacturing woollen yarn or worsted yarn by both the French and Bradford systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz.—trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving which serves not only to acquaint the student with the many kinds of cotton, woollen, worsted, and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative Art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year. The instruction includes a short course in the dyeing laboratory.

Power weaving commences with the second year and continues throughout the course and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woollen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 107.



# COURSE III-3.—TEXTILE DESIGN

## (General Textile Course)

(For First Term see page 91)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 135	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 60	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Textile Design, Decorative		Machine Drawing	B-10 30
Art, Hand Loom Weaving	D-2, 3, 4, 5 135	Steam Engineering	B-12 45
Cotton Yarn Manufacture	F-1 128	Weaving Mechanism	B-5 30
Power Weaving	D-9 67	Physics	B-11 30
Textile Chemistry and Dyeing	C-9 30	Industrial History	E-6 15

#### SECOND TERM

Textile Design, Decorative		Textile Chemistry and Dyeing	C-9, 11 67
Art, Hand Loom Weaving	D-2, 3, 4, 5 135	Physics	B-11 45
Wool Yarn Manufacture	F-1 105	Industrial History	E-6 15
Power Weaving	D-9 75	Cotton Yarn Manufacture	F-1 38
Strength of Materials	B-21 30		

### THIRD YEAR

#### FIRST TERM

Textile Design, Cloth Construction, Decorative Art		Power Weaving	D-10 113
	D-6, 7, 8 135	Woolen and Worsted Finishing	H-1 75
Woolen and Worsted Yarn Manufacture	G-1 112	Cotton Finishing	H-2 30
Mill Engineering	B-17 30	Electricity	B-20 15

#### SECOND TERM

Textile Design, Cloth Construction, Decorative Art		Power Weaving	D-10 106
	D-6, 7, 8 150	Woolen and Worsted Finishing	H-1 75
Woolen and Worsted Yarn Manufacture	G-1 67	Cotton Finishing	H-2 67
Mill Engineering	B-17 45	Thesis	

#### COURSE IV-4.—CHEMISTRY AND TEXTILE COLORING

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The Four Year Course in Chemistry and Textile Coloring leading to the degree of B. T. D. is especially intended for those who wish to engage in any branch of Textile Chemistry, Textile Coloring, Bleaching, Finishing, or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring, and finishing are taught by lecture work supplemented with a large amount of experimental laboratory work and actual practice in the dye-house and finishing room.

The underlying theories and principles of chemistry are the same no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the Textile Colorist must consider the complex composition of the textile fibres, and the obscure reactions which take place between them and the other materials of the textile industry.

During the first year General Chemistry including both Inorganic and Organic is taught by lectures and laboratory work, and this is supplemented during the second term by Qualitative Analysis and Stoichiometry.

Advanced Inorganic Chemistry as well as Advanced Organic Chemistry are studied during the second and third year as a continuation of the Elementary Chemistry of the first year, and much time is spent upon Quantitative Analysis, Industrial Chemistry, and Textile Chemistry and Dyeing.

The foundation work in General Chemistry is continued during the third year with courses in Physical Chemistry, Organic laboratory work, and analytical work. The subject of Industrial Chemistry is introduced and much time is devoted to Advanced Textile Chemistry, Dye Testing, Color Matching, Calico Printing, and Woolen, Worsted, and Cotton Finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of Engineering Chemistry is introduced and the work in the Dyeing and Analytical laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in Microscopy, Photomicrography and the use of the various instruments such as the Spectroscope, Ultra-microscope, Polariscope, Tintometer, etc., which often prove of vital importance in the advanced study of Textile Chemistry. During this fourth year, the student devotes much time in the Organic Laboratory in the manufacture of dyestuffs. This is followed by some research work, or original investigation as time will permit. Upon this he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 107.

# COURSE IV-4.—CHEMISTRY AND TEXTILE COLORING

(For First Year see page 91)

## SECOND YEAR

### FIRST TERM

	Hours of Exercise		Hours of Exercise
Advanced Inorganic Chemistry	C-4 45	Stoichiometry	C-3 15
Textile Chemistry and Dyeing Lecture	C-9 30	Quantitative Laboratory	C-7 195
Textile Chemistry and Dyeing Laboratory	C-10 68	Steam Engineering	B-12 45
Quantitative Analysis Lect.	C-7 15	Physics	B-11 30
		Industrial History	E-6 15
		Advanced German	E-3 30
		Power Weaving	D-9 22

### SECOND TERM

Advanced Inorganic Chemistry	C-4 30	Quantitative Lab. Lect.	C-7 15
Textile Chemistry and Dyeing Lecture	G-9 15	Quantitative Laboratory	C-7 112
Textile Chemistry and Dyeing Laboratory	C-10 203	Advanced Organic Chemistry	C-5 30
Stoichiometry	C-3 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30

## THIRD YEAR

### FIRST TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Quantitative Analysis Lab.	C-7 113
Advanced Textile Chemistry and Dyeing Lab.	C-14 210	Advanced Organic Chemistry Lecture	C-5 30
Industrial Chemistry	C-13 30	Technical German	C-21 30
Quantitative Analysis Lect.	C-7 15	Woolen and Worsted Finishing	H-1 67

### SECOND TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemistry and Dyeing Lab.	C-14 90	Technical German	C-21 30
Industrial Chemistry	C-12 30	Organic Laboratory	C-15 120
Woolen and Worsted Finishing	H-1 67	Quantitative Analysis Lect.	C-7 15
		Quantitative Analysis Lab.	C-7 113

## FOURTH YEAR

### FIRST TERM

Physical Chemistry	C-8 15	Economics	E-7 30
Technical German	C-21 15	Quantitative Analysis and Industrial Analysis	C-17 98
Engineering Chemistry	C-16 15	Dyeing Laboratory	C-14 60
Advanced Textile Chemistry and Dyeing	C-14 15	Organic Laboratory	C-15 105
Advanced Organic Chemistry Dyestuffs	C-20 15	Industrial Laboratory	C-12 45
		Thesis	C-22 97

### SECOND TERM

Organic Laboratory	C-15 120	Advanced Dyeing Conference	C-19 15
Microscopy	C-18 37	Economics	E-7 30
Thesis	C-22 150	Technical German	C-21 15
Dyeing Laboratory	C-14 128	Quantitative Analysis Lect.	C-7 15

## COURSE VI-4.—TEXTILE ENGINEERING

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At the organization of the school four major courses were offered but with the growth of the school a demand was felt for instruction in engineering subjects supplemented by a study of textile machinery and processes. A three year course to meet this demand was offered and the development of this through a study of the possible requirements of a Textile Engineer has made evident a broader course of four years which leads to the degree of Bachelor of Textile Engineering (B. T. E.).

The subjects of the first year which are substantially the same for all courses are intended to lay the foundation for the subsequent dependent instruction in the applied courses. Hence, the subjects of Mathematics, Chemistry, Mechanism, and Mechanical Drawing not only operate to develop the mind and stimulate accurate thinking, but also set forth the principles which are later to be used in a clear understanding of machines and methods. The course in Elementary Designing acquaints the student with textile fabrics and their construction. The subjects of English and one foreign language give the student a better understanding of his own language that he may express himself clearly, and by acquaintance with a foreign language he may obtain information not available in his own tongue.

In the second term instruction in Cotton Yarn Manufacturing commences. This is continued into the second year followed in the succeeding years by Wool Manufacturing, Weaving, and Finishing. Chemistry of the first year develops into Textile Chemistry and Dyeing of the second year, and during this year an advanced course of Physics is given, leading to Electrical Engineering and its application in the textile industry. Mathematics are finished with the third year and during the course the branches of higher Algebra, Trigonometry, Analytical Geometry, and Calculus are studied with particular reference to the solution of engineering problems, as found in the subjects of Applied Mechanics, Electrical, Heat, and Mill Engineering, which are a part of the second, third, and last years' work.

The fourth year permits of a pursual of more advanced work in Mill Engineering, Electrical and Heat Engineering, as well as some further instruction in those textile processes of Cotton and Worsted Spinning, Cotton Finishing, etc., for which three years' time does not permit. General courses of Business Law, Accounting and Principles of Efficiency Engineering under the head of Business Administration are included in the fourth year.

For detailed description of the subjects see page 107.



# COURSE VI-4.—TEXTILE ENGINEERING

## Cotton Option

(For First Year see page 91)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing	C-9 30	Graphic Statics	B-4 30
Physics	B-11 30	Weaving Mechanism	B-5 30
Mathematics	B-2 45	Shop Work	B-15 60
Machine Drawing	B-8 75	Cotton Yarn Manufacture	F-1 75
Engineering Laboratory	B-14 37	Cotton Design	D-2 30
Steam Engineering	B-12 45	Advanced German	E-3, 5 30
		Industrial History	E-6' 15
		Power Weaving	D-9 30

#### SECOND TERM

Textile Chemistry and Dye- ing	C-9 15	Shop Work	B-15 60
Physics	B-11 45	Cotton Yarn Manufacture	F-1 105
Mathematics	B-2 45	Cotton Design	D-2 37
Strength of Materials	B-21 30	Power Weaving	D-9 45
Machine Drawing	B-8 37	Advanced German	E-3, 5 30
Steam Engineering	B-12 52	Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-10 68	Cotton Design	D-6, 7 45
Machine Shop Practice	B-15 60	Power Weaving	D-9 82
Mill Engineering	B-17 60	Engineering Laboratory	B-14 38
Cotton Yarn Manufacture	F-1 127	Mathematics	B-2 30

#### SECOND TERM

Hydraulics	B-13 15	Cotton Design	D-6, 7 45
Electrical Engineering	G-10 120	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Engineering Laboratory	B-14 30
Mill Engineering	B-17 90	Mathematics	B-2 45
Cotton Yarn Manufacture	F-1 68		

### FOURTH YEAR

#### FIRST TERM

Mill Engineering	B-17 60	Cotton Design	D-6, 7 45
Electrical Engineering	B-10 72	Cotton Finishing	H-2 67
Cotton Yarn Manufacture	F-1 71	Power Weaving	D-10 30
Strength of Materials	B-21 30	Business Administration	E-8 90
Power Plants	B-18 15	Economics	E-7 30

#### SECOND TERM

Cotton Yarn Manufacture	F-1 70	Textile Testing	30
Mill Engineering	B-17 82	Cotton Finishing	H-2 67
Electrical Engineering	B-10 90	Business Administration	E-8 90
Strength of Materials	B-21 30	Thesis	21
Economics	E-7 30		



# COURSE VI-4.—TEXTILE ENGINEERING

## General Textile Option

(For First Year see page 91)

### SECOND YEAR

		FIRST TERM	
	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dyeing	C-9 30	Graphic Statics	B-4 30
Physics	B-11 30	Engineering Laboratory	B-14 37
Mathematics	B-2 45	Weaving Mechanism	B-5 30
Machine Drawing	B-10 75	Shop Work	B-15 60
Steam Engineering	B-12 45	Cotton Yarn Manufacture	F-1 75
Power Weaving	D-9 30	Advanced German	E-3-5 30
		Industrial History	E-6 15

		SECOND TERM	
Textile Chemistry and Dyeing	C-9 15	Steam Engineering	B-14 52
Physics	B-11 45	Shop Work	B-15 60
Mathematics	B-2 45	Wool Yarn Manufacture	F-1 105
Strength of Materials	B-21 30	Advanced German	E-3-5 30
Machine Drawing	B-10 75	Industrial History	E-6 15
		Power Weaving	D-9 45

### THIRD YEAR

		FIRST TERM	
Electrical Engineering	B-19 67	Power Weaving	D-9 60
Machine Shop Practice	B-15 60	Mathematics	B-2 30
Engineering Laboratory	B-14 37	Mill Engineering	B-17 60
Woolen and Worsted Yarn Manufacture	G-1 129	Woolen and Worsted Finishing	H-1 67

		SECOND TERM	
Hydraulics	B-13 15	Power Plants	B-18 15
Electrical Engineering	B-19 120	Woolen and Worsted Yarn Manufacture	G-1 68
Mill Engineering	B-17 90	Woolen and Worsted Finishing	H-1 30
Machine Shop Practice	B-15 60	Power Weaving	D-9 37
Engineering Laboratory	B-14 30		
Mathematics	B-2 45		

### FOURTH YEAR

		FIRST TERM	
Cotton Yarn Manufacture	F-1 30	Woolen and Worsted Yarn Manufacture	G-1 67
Mill Engineering	B-19 72	Business Administration	E-8 90
Electrical Engineering	B-19 72	Strength of Materials	B-4 30
Power Plants	B-18 15	Thesis	75
Cotton Finishing	H-2 15		
Economics	E-7 30		

		SECOND TERM	
Cotton Yarn Manufacture	F-1 38	Business Administration	E-8 90
Mill Engineering	B-17 82	Thesis	38
Electrical Engineering	B-19 90	Textile Testing	G-2 30
Cotton Finishing	H-2 67	Strength of Materials	B-4 30
Economics	E-7 30		

# COURSE VI-4.—TEXTILE ENGINEERING

## Wool Option

(For First Year see page 91)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing	C-9 30	Graphic Statics	B-4 30
Physics	B-11 30	Shop Work	B-15 60
Mathematics	B-2 45	Woolen and Worsted Yarn Manufacture	G-1 75
Machine Drawing	B-8 75	Woolen and Worsted Design	D-3 30
Weaving Mechanism	B-5 30	Advanced German	E-3, 5 30
Engineering Laboratory	B-14 37	Industrial History	E-6 15
Steam Engineering	B-12 45	Power Weaving	D-9 30

#### SECOND TERM

Textile Chemistry and Dye- ing	C-9 15	Woolen and Worsted Yarn Manufacture	G-1 105
Physics	B-11 45	Woolen and Worsted Design	D-3 37
Mathematics	B-2 45	Power Weaving	D-9 45
Strength of Materials	B-4 30	Advanced German	E-3, 5 30
Machine Drawing	B-8 37	Industrial History	E-6 15
Shop Work	B-15 60		
Steam Engineering	B-12 52		

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-19 68	Woolen and Worsted Design	D-6, 7 45
Machine Shop Practice	B-15 60	Power Weaving	D-9 82
Mathematics	B-2 30	Engineering Laboratory	B-14 38
Mill Engineering	B-17 60		
Woolen and Worsted Yarn Manufacture	G-1 127		

#### SECOND TERM

Hydraulics	B-13 15	Woolen and Worsted Yarn Manufacture	G-1 68
Electrical Engineering	B-19 120	Woolen and Worsted De- sign	D-6, 7 45
Mill Engineering	B-17 90	Power Weaving	D-9 45
Machine Shop Practice	B-15 60		
Engineering Laboratory	B-14 30		
Mathematics	B-2 45		

### FOURTH YEAR

#### FIRST TERM

Mill Engineering	B-17 60	Woolen and Worsted Finishing	H-1 67
Electrical Engineering	B-19 72	Power Weaving	D-10 30
Worsted Yarn Manufacture	G-1 71	Business Administration	E-8 90
Strength of Materials	B-21 30	Power Plants	B-18 15
Woolen and Worsted Design	D-6, 7 45	Economics	E-7 30

#### SECOND TERM

Mill Engineering	B-17 60	Woolen and Worsted Finishing	H-1 67
Electrical Engineering	B-19 83	Business Administration	E-8 07
Worsted Yarn Manufacture	G-1 60	Thesis	68
Strength of Materials	B-21 30	Textile Testing	45

### COURSE VI-3.—TEXTILE ENGINEERING

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This course is planned to train the student, as far as possible in three years, to meet intelligently the engineering problems of the textile industry, as well as to provide him with the essentials of the processes and machines in the varied branches of this industry. Many of the subjects taken in this course are the same as given in VI-4, page 100, but some cannot be taken up in the limited time while others can be carried farther in the fourth year.

The student is first thoroughly grounded in the broad fundamental principles of science and mathematics underlying all engineering work and textile manufacturing with its many closely allied industries. The most important of the preliminary subjects are mathematics, physics, mechanics and mechanism, and mechanical drawing. The work in mechanism and drawing is particularly thorough and the practical uses of these subjects are considered of first importance. The study of physics while taking up the usual branches included in this subject also serves as a preparatory course for later instruction in Steam, Electricity and Hydraulics. The student is required to spend a portion of his time during the course upon the subject of cotton yarns, woolen and worsted yarns, and power weaving with practical work in each branch. During his first year he has a brief course in the elements of design, and in his second year he pursues a course in textile chemistry and dyeing which is preceded in the first year by the necessary preliminary course in elementary organic and inorganic chemistry. Special importance is attached to the study of power generation, transmission, and measurement, and courses with laboratory practice are given in the elements of steam, electrical and hydraulic engineering, to familiarize the student with the means, methods and results available in the modern practice of these branches.

The recently equipped engineering laboratory together with the extensive power plant of the school affords opportunities for a varied line of experimental work including boiler, engine, turbine, generator and pump tests. Systematic instruction in the most approved methods of machine shop practice is provided in a shop which is fully equipped with the best makes of modern tools. This feature of the course is considered a most valuable adjunct to the training of a textile engineer.

The work in mill engineering covers a wide range of subjects including mill construction with calculations and drawings, mill heating, lighting, fire protection, and electric driving. The arrangement of plants and machinery for the most economical power distribution and efficient organization is also taken up in detail, data for problems being taken from actual cases and the solution compared with those of some of our best known mill engineers.

For detailed description of the subjects see page 107.

## COURSE VI-3.—TEXTILE ENGINEERING

(For First Term see page 91)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary German or	E-2 } 30
Mechanical Drawing	B-8 98	Elementary French	E-4 }
Mathematics	B-1 45	Physical Culture	I-1 30
Textile Design	D-1 60	Mechanical Laboratory	B-6 37
Elementary Chemistry	C-1 75	Cotton Yarns	F-1 60
English	E-1 30		

### SECOND YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 75	Graphic Statics	B-4 30
Power Weaving	D-9 30	Steam Engineering	B-12 45
Textile Chemistry and Dye- ing	C-9 30	Weaving Mechanism	B-5 30
Mathematics	B-2 45	Machine Shop Practice	B-15 60
Machine Drawing	B-10 75	Engineering Laboratory	B-14 37
		Physics	B-11 30
		Industrial History	E-6 15

#### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 105	Machine Drawing	B-10 75
Power Weaving	D-9 30	Steam Engineering	B-12 52
Textile Chemistry and Dye- ing	C-9 15	Strength of Materials	B-21 30
Mathematics	B-2 45	Machine Shop Practice	B-15 60
		Physics	B-11 45
		Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Woolen and Worsted Yarn Manufacture	G-1 120	Cotton Finishing	H-2 15
Power Weaving	D-10 45	Machine Shop Practice	B-15 60
Woolen and Worsted Finishing	H-1 67	Engineering Laboratory	B-14 37
Mill Engineering	B-17 68	Electricity	B-19 38
		Mathematics	B-2 30

#### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 97	Power Plants	B-18 15
Woolen and Worsted Finishing	H-1 30	Electrical Engineering	B-19 90
Cotton Finishing	H-2 15	Hydraulics	B-13 15
Mill Engineering	B-17 90	Machine Shop Practice	B-15 60
		Engineering Laboratory	B-14 37
		Thesis	68

## ENTRANCE REQUIREMENTS

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The requirements for admission to this school are given in detail on page 73.

### DIPLOMA COURSES—REQUIRED SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra (I Elementary. II Advanced.)
- A-3 Elementary German B  
or
- A-4 Elementary French B
- A-5 English
- A-6 History
- A-7 Arithmetic

### DEGREE COURSES—ELECTIVE SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra (I Elementary. II Advanced.)
- A-3 Elementary German A  
or
- A-4 Elementary French A
- A-5 English
- A-6 History

### DEGREE COURSES—REQUIRED SUBJECTS

- A-8 Physics
- A-9 Chemistry
- A-10 Solid Geometry
- A-11 Trigonometry
- A-12 Mechanical Drawing
- A-13 Mechanic Arts
- A-14 History
- A-15 Advanced German  
or
- A-16 Advanced French
- A-17 English



## Subjects of Instruction

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### TEXTILE ENGINEERING DEPARTMENT—B

#### Mathematics

(Algebra, Trigonometry, Elements of Analytical Geometry)—B-1

PREPARATION: A-1, A-2

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of Higher Algebra and Trigonometry, in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, text-book, class and problem work, and consists essentially of the following: Progressions, Graphical Representation, Permutations and Combinations, Logarithms, Slide Rule, Trigonometry, Binomial Theorem, Partial and Continued Fractions, Series, Theory of Equations, Significant Figures, and Plotting of Scientific Data, Straight Line Equations, Point of Division of a Line, Equation of Parallel and Perpendicular Lines.

[ALL COURSES]

#### Mathematics

(Analytical Geometry, Differential Calculus, Elements of Integral Calculus)—B-2

PREPARATION: B-1

This course is a continuation of the work of the first year, and treats of the following subjects: Formulae of Differentiation, Conic Sections, Transformation of Co-ordinates, Maxima and Minima, Direction of Curves, Center and Radius of Curvature, Problems on Differential Calculus, Elements of Integral Calculus, Integration as a Summation, and Plane Areas. The above are treated in both Rectangular and Polar Co-ordinates. Formulae of Integration, Integration by parts, Integration by Substitution, Successive Integration, Evaluation of Integrals, Center of Gravity, Center of Pressure, Total Pressure, Moment of Inertia.

[COURSES VI-4, VI-3]

### Mechanics and Mechanism—B-3

PREPARATION: A-1, A-2, B-1. TAKEN SIMULTANEOUSLY WITH B-1

These subjects are a necessary preparation for all courses and are taken in one hundred and five hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance and the application and problems are selected with special reference to their practical uses in textile machinery. The large variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subjects treated in this course are:

#### MECHANICS

Work, power and energy.  
Principle of moments.  
Simple and compound levers.  
Differential and common pulleys.  
Jack screw and worm and wheel.  
Parallelogram and triangle of forces  
Inclined plane and wedge.

#### MECHANISM

Linear and angular velocity.  
Belting calculations.  
Gears and gear trains.  
Cam and cone pulley design.  
Linkage problems.  
Intermittent motions.  
Differential and epicyclic trains.

[ALL COURSES]

### Graphic Statics—B-4

PREPARATION: B-1 AND B-3

The work in this course is presented by lectures and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered.

[COURSES VI-4, VI-3]

### Weaving Mechanism—B-5

PREPARATION: TAKEN SIMULTANEOUSLY WITH D-9

This course consists of thirty lectures given during the first term of the second year and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[COURSES VI-4, I-3, II-3, III-3, AND VI-3]

### **Mechanical Laboratory—B-6**

#### **PREPARATIONS B-3. TAKEN SIMULTANEOUSLY WITH B-4**

This work is given during the second term of the first year and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows:

- Determination of coefficient of friction.

- Proof of principle of moments.

- Proof of principle of work.

- Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jack screws, wedges, etc.

- Experimental proofs of the principles of graphic statics.

- Efficiency tests on belt transmission including measurement of belt tensions, co-efficient of friction, slip, etc.

- Tests on various types of absorption dynamometers.

- Calibration of transmission dynamometer.

- Power measurements on textile machinery with differential dynamometer.

- Measurement of friction of steam engine.

[COURSES VI-4, VI-3]

### **Mechanical Drawing—B-7**

#### **PREPARATION: A-1. TAKEN SIMULTANEOUSLY WITH B-3**

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions:

- Care and use of drawing instruments.

- Geometrical constructions.

- Elements of projections and descriptive geometry.

- Isometric projection.

- Developments with practical applications.

- Sketching practice on machine details.

[ALL COURSES]

### **Machine Drawing—B-8**

#### **PREPARATION: B-7**

This work is the continuation of the mechanical drawing and is pursued throughout the second term of first year. This work is wholly of a practical character and includes sketching from textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

### **Machine Drawing—B-9**

PREPARATION: B-7

For students electing IV-3 or IV-4 in the second term of the first year a course of machine drawing is given similar to B-8 except that it is not as extensive and is concluded in thirty hours.

### **Machine Drawing—B-10**

PREPARATION: B-3, B-7, B-8

During the second year a period of two hours per week is devoted to advanced graphical mechanism problems. The data for all of these problems is in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame cone design, mule quadrant motion, analysis of camless winder and a number of others of similar character.

[COURSE: I-3, II-3, III-3, VI-3, VI-4]

### **Physics—B-11**

PREPARATION: B-1

This course is given during the second year and serves especially as a preparation for Steam Engineering, Hydraulics, Electricity and Optics. The subject is presented by means of lectures, recitations, problems, and reference books. The lectures deal chiefly with the application of the various physical laws and principles with the view of their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: Gravitation, Moving Bodies, Mechanics, Elasticity, Hydrostatics, Elements of Hydraulics, Properties of Fluids and Gases, and the Theory of Sound. These subjects are followed by a series of lectures on heat phenomena dealing with the Generation of Heat, Thermometry, Calorimetry, Transfer of Heat, its Effect on Solids, Liquids, and Gases, and problems such as lead to the Elements of Steam Engineering.

The latter part of the course is devoted to the discussion of the laws governing the Nature, Propagation and Transmission of Light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young Helmholtz Theory of Color Sensation. During the last part of the course the principles of Electricity and Magnetism are taken up in detail.

[ALL COURSES]



## **Steam Engineering—B-12**

### **PREPARATION : B-II**

The purpose of this work is to familiarize the student with the essentials of power generation and the means and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines, and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work, and also engine and boiler testing.

[ALL COURSES]

## **Hydraulics—B-13**

### **PREPARATION : B-3, B-II**

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[COURSES I-3, II-3, VI-3, VI-4]

## **Engineering Laboratory—B-14**

### **PREPARATION : B-12**

The principles underlying the subjects of Steam Engineering, Hydraulics and Thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests:

Calibration of gages, thermometers, indicators, anemometers, tachometers, and other measuring instruments.

Experiments on flow of steam.

Calorimeter tests.

Radiation tests and pipe covering tests.

Injector and ejector tests.

Engine tests. Condensing and non-condensing.

Steam pump tests.

Surface condenser tests.

Valve setting.

Boiler testing.



Tests on heating and ventilating fans, both motor and engine driven.  
Pump tests. Triplex and centrifugal.  
Air compressor tests.  
Flue gas analysis.  
Steam turbine tests. Condensing, non-condensing and low pressure.  
Complete steam plant testing.  
Gas engine testing.

[COURSES VI-3, VI-4]

### **Machine Shop Practice—B-15**

#### **PREPARATION: B-3**

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools and the characteristics of the different materials worked. Arrangements have been made with a local machine company of such a character as to give the work the greatest educational value and the important commercial element which stimulates the student's interest. Particular attention is given to the form, setting, grinding, and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine shop practice on textile machinery. The list of tools which appears under Equipment in this bulletin gives an idea of the scope of the work which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of wood working tools, both hand and machine and in forging.

[COURSES VI-3, VI-4]

### **Mill Engineering—B-17**

#### **PREPARATION: B-3, B-4, B-10**

This work covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A detailed study is made of the most modern types of mill buildings including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.

The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions from mills

already built or in process of construction. The question of mill heating, ventilation, lighting, humidification and fire protection are also studied and the time spent in the drawing-room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[COURSE VI-4]

### **Power Plants—B-18**

PREPARATION: B-13

This course, which consists of lectures given in the second term of the third year, takes up the fundamental considerations involved in the planning of a power plant for a textile mill. A standard text book is used in connection with the lectures and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[COURSES VI-3, VI-4]

### **Electrical Engineering—B-19**

PREPARATION: B-II

The elementary principles of Electricity and Magnetism are considered in a lecture course. The development and application are shown by detailed study of the means used to generate, transmit, and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of Direct and Alternating Current Generators, Motors, Instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[COURSES VI-3, VI-4]

### **Efficiency Engineering—B-20**

In recognition of the great advances which have been recently made towards better methods of management and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the student to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of the work of the various departments, es-

pecially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use and the relations of psychology to efficient management is also considered. Finally, visits to shops where modern methods of management have been installed enables the student to see the practical working out of the ideas developed in the lectures.

#### *Accounting*

The purpose of the course in accounting is two fold. In the first place it aims to acquaint the student with the modern methods of handling the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such as, for instance, the use of checks, drafts and notes, bank discounts, etc. In the second place it gives him an intelligent comprehension of the requirements and the design of a proper cost accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lectures and practice work. It is coupled with instruction on the compilation of Balance Sheets in proper form, together with Profit and Loss statements and supporting schedules. Thus a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures and elaborated by actual practice.

Cost Accounting forms an important part of this subject and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

During the summer preceding this work of the fourth year, the student is required to work up a simple bookkeeping set, thus saving valuable time during the school year and effectively preparing the ground for the instruction work.

#### *Business Law*

Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing Contracts, Negotiable Instruments, Sales, Bills of Lading, Real Estate and Corporations.

#### *Patent Law*

During the fourth year a course of six lectures is given by a practising Patent Attorney of Lowell. This course takes up the elements of patent law and is intended to give the student a guiding knowledge of the subject.

## Strength of Materials—B-21

PREPARATION: B-1 AND B-3

This is a short course consisting of thirty lectures given in the second year in which the elements of the subject are set forth. The main topics which are discussed are stress and strain, testing of materials, bending moments and shearing forces, beam design, column design, torsion, compound beams and columns, combined stresses. The course is largely preparatory for the third year work in Mill Engineering, and is followed in the fourth year of the degree course in Textile Engineering by further and more advanced work along similar lines.

[COURSES VI-4, VI-3, I-3, II-3, III-3]

## CHEMISTRY AND DYEING DEPARTMENT—C

### Elementary Chemistry (Inorganic and Organic Chemistry)—C-1

Instruction in Elementary Chemistry extends through the first year and includes lectures, recitations, and a large amount of individual laboratory work upon the following subjects:

#### *Chemical Philosophy*

Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

#### *Non-Metallic Elements*

Study of their occurrence, properties, preparations, chemical compounds, etc.

#### *Metallic Elements*

Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up as thoroughly as the time will permit the qualitative detection of the more common metals and non-metals, with practical work.

#### *The Hydrocarbons and their Derivatives*

Study of their occurrence, properties, preparations and uses. This work although elementary in character is of sufficient breadth to prepare the student understandingly for the work with the artificial dyestuffs which follows.

[ALL COURSES]

### Qualitative Analysis—C-2

PREPARATION: C-1 TAKEN, SIMULTANEOUSLY

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations, and laboratory work. The student must become familiar with the separations and the detections



of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys, and pigments. At intervals during the term, short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments, and the various dyeing reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of Quantitative Analysis, such as the precipitation and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.

A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[COURSES IV-4, IV-3]

### **Stoichiometry—C-3**

PREPARATION: B-1

This subject is taken during the second half of the first year and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied, and problems are worked involving the expansion and contraction of gases, determination of empirical formulae, combining volume of gases and quantitative analysis.

[COURSES IV-4, IV-3]

### **Advanced Inorganic Chemistry—C-4**

PREPARATION: C-1

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first year course in General Chemistry.

[COURSES IV-4, IV-3]

### **Advanced Organic Chemistry—C-5**

PREPARATION: C-1

In this course which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as the time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the



time being devoted to the benzine series. The aim of the course is to lay a broad foundation for the study of the Chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds in order to become familiarized with equation writing.

[COURSES IV-4, IV-3]

### **Quantitative Analysis—C-6**

PREPARATION: C-2, C-3

During the second year, the principles of analytical work are thoroughly taught, the work being based on Talbot's Quantitative Chemical Analysis. Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include salts, ores, minerals, bleaching powder and alkalies. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[COURSES IV-4, IV-3]

### **Quantitative Analysis—C-7**

PREPARATION: C-6

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin, and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums, and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[COURSES IV-4, IV-3]

### **Physical Chemistry—C-8**

PREPARATION: C-4, C-5, B-II

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[COURSES IV-4, IV-3]

## Textile Chemistry and Dyeing—C-9

PREPARATION: C-1, B-3, B-7

The outline of the lecture course which is given through the second year is as follows:

### *Technology of Vegetable Fibres*

Cotton, Linen, Jute, Hemps, China Grass. Chemical and physical properties, chemical composition, microscopical study, and their action with chemicals, acids, alkalies and heat.

### *Technology of Animal Fibres*

Wool, Mohair, Silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

### *Technology of Artificial Fibres*

Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

### *Operations Preliminary to Dyeing*

Bleaching of cotton and linen, wool scouring, bleaching, fulling and felting of wool, carbonizing, silk scouring and bleaching, action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in emulsive wool scouring process and their action upon the fibre under various conditions; also the most successful of the solvent methods for degreasing wool.

### *Water and its Application in the Textile Industry*

Impurities present, methods for detection, their effect during the different operations of bleaching, scouring, dyeing and printing, and the methods for their removal or correction.

The important subject of boiler waters is also studied under this heading with a full discussion of the formation of boiler scale, its disastrous results and the methods by which it may be prevented.

## *Mordants and Other Chemical Compounds used in Textile Coloring and Classified as Dyestuffs*

Theory of mordants, their chemical properties and the application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, levelling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under the heading are included the definition of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and levelling agents.

## *Theory of Dyeing*

A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

## *Natural Organic Coloring Matters*

Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used within recent years by textile colorists.

## *Mineral Coloring Matters*

Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

## *Artificial Coloring Matters*

General discussion of their history, nature, source, methods of manufacture, methods of classification, and their application to all fibres.

Special study of:—

Basic Coloring Matters.

Phthalic Anhydride Colors, including the eosins and phloxines.

Acid Dyestuffs.

Janus Colors.

Direct Cotton Colors.

Sulphur Colors.

Mordant Colors, including the alizarines and other artificial coloring matters requiring metallic mordants.

Mordant Acid Colors.

Insoluble Azo Colors, developed on the fibre.

Reduction Vat Colors.

Aniline Black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

### *Machinery used in Dyeing*

A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams, and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the School and the students can be taken directly from the lecture room and shown the machines in actual operation.

[ALL COURSES]

### **Dyeing Laboratory—C-10**

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities, in the full sized dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full sized dyeing machines and vats, the practical side of the subject is studied. It is the constant endeavor of those in charge, to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[COURSES IV-4, IV-3]



## Dyeing Laboratory—C-11

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

This course in general laboratory work in Textile Chemistry and Dyeing is given during the second term of the second year. It is so arranged as to acquaint the student with the properties of the fibres, mordants and coloring matters, and their application in the Textile Industry.

[COURSES I-3, II-3, III-3]

## Industrial Chemistry

### Laboratory—C-12

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the second year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully with the view of producing as great and pure a yield of each substance as possible. Industrial Chemistry not only involves the application of the principles of both inorganic and organic chemistry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds) making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process with the object of producing as near the theoretical yield as possible. The student is charged with the amount of raw material at market prices, and the finished product is bought back by the school.

Recently much new apparatus has been added to the industrial chemistry laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[COURSES IV-4, IV-3]

## Industrial Chemistry

### Lecture—C-13

PREPARATION: C-4, C-5, C-12

During the whole of the third year, lectures and recitations are held in Industrial Chemistry the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and



coal tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powder, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[COURSES IV-4, IV-3]

### Advanced Textile Chemistry and Dyeing—C-14

PREPARATION: C-9, C-10

This is a continuation of the Textile Chemistry and Dyeing of the second year and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and in addition the following subjects:—

#### *Classification and Construction of Artificial Dyestuffs*

A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

#### *Color Matching and Color Combining*

A study of that portion of physics which deals with color, and the many color phenomena of interest to the textile colorist, and lecture work being supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist and the results of combining colored lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics are discussed under this heading.

Each student's eyes are tested for color blindness early in the course in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color-work and color matching may be performed.

### *Dye Testing*

This subject includes the testing of several dyestuffs of each class, to all the common color destroying agencies, the determination of their characteristic properties and their action towards the different fibres, also the determination of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card which furnishes a permanent record of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalies.

### *Union Dyeing*

A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials with the production of solid and two color effects.

### *Textile Printing*

A thorough study of the whole subject of textile printing, each student being required to individually produce no less than twenty different prints including the following styles:—Pigment style, direct printing style, steam style with tannin mordant, steam style with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied, also the precautions which must be considered in its use and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon the manufacturing scale as well as experimentally in the laboratory.

### *Cotton Finishing*

A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, mercerizing, beetling, and filling, and the various machines used for carrying out these processes.

### *Mill Visits*

During the third and fourth years, visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

[COURSES IV-4, IV-3]

### **Organic Chemistry Laboratory—C-15**

This course, while including practice in the usual methods of organic analysis and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dyestuffs. The student not only prepares many of the representative dyestuffs, but what is far more important, he carries out all the operations beginning with coal tar itself. Thus, instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar and makes his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory and an excellent opportunity is presented for original work.

[COURSE IV-4]

### **Engineering Chemistry—C-16**

PREPARATION: C-4, C-5, C-6

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils, and water from the chemical engineer's standpoint. The elements of Chemical Engineering are also considered to such an extent as time will permit.

[COURSES IV-4, IV-3]

### **Industrial Analysis—C-17**

PREPARATION: C-6

In conjunction with the lectures in Engineering Chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[COURSES IV-4, IV-3]

### **Microscopy and Photomicrography—C-18**

The value of the microscope in the detection and examination of the various fibres cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high grade microscopes, and not only have practice in the examination and detection of the fibres, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibres and the various slides which they may prepare. A special dark room has been provided for this purpose.

[COURSES IV-4, IV-3]

### **Advanced Dyeing Conference—C-19**

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is two fold. First to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others, and secondly of bringing before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[COURSE IV-4]

### **Advanced Organic Chemistry (Dyestuffs)—C-20**

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[COURSE IV-4]

### **Technical German—C-21**

This course consists of the reading of German technical literature with the object of familiarizing the student with the current German publications in Textile Chemistry and Coloring.

[COURSE IV-4]

### **Thesis—C-22**

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[COURSE IV-4]

## **TEXTILE DESIGN AND WEAVING DEPARTMENT—D**

### **Textile Design—D-1**

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves including figured and colored effects; producing chain and draw from design and vice versa; extending and extracting weaves.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3 III-3, VI-3, VI-4]



### Decorative Art—D-1

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term Freehand Drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The Engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing with reference to their application in textiles. Good examples of applied design in textiles as well as in other branches are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

### Cloth Analysis—D-1

In the first year this subject takes up in a systematic manner, the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave, the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are: reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibres; grading of yarns, folded, ply, novelty and fancy yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, weight of yarn required to produce a given fabric.

[FIRST YEAR—ALL COURSES]

### Hand Loom Weaving—D-1

During the first year the work in hand loom weaving is taken in connection with design and analysis and consists largely of picking-out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for dobby work.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3, III-3]

### Textile Design—D-2

FOR COTTON GOODS—PREPARATION: D-1

The work of the second year follows with consideration of fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same into the loom. Special attention is given to the consideration of color effects.



The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[COURSES I-3, III-3, VI-4]

### **Textile Design—D-3**

FOR WOOLEN AND WORSTED GOODS

PREPARATION: D-I

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath-robos, crepes, filling reversible, Bedford cords, imitation furs, crepons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics together with the consideration of the shrinkages, and dead loss in all fabrics, theory of diameter of yarns, costs of mixer and blends, is a part of this course.

[COURSES II-3, III-3, VI-4]

### **Decorative Art—D-4**

PREPARATION: D-I

The work of the second year is similar to that of the previous year, but is more advanced and specific. More original work is required as well as copying and composition work.

[COURSE III-3]

### **Hand Loom Weaving—D-5**

PREPARATION: D-I

In the second year, blanket, Jacquard and leno work are covered, and experiments are made with different weaves and fabrics.

[COURSE III-3]

### **Textile Design—D-6**

PREPARATION: D-2 OR D-3

The advanced work takes up the more complicated weaves adapted to harness work and leads into leno and Jacquard designs. The following is a brief list of the subject heads which will give some idea of the course: Double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholstery, spot weaves, pile or plush, crepon, matelasse and its imitation, pique, Marseilles, quilting, miscellaneous designs for Jacquard, lenos, fus-tian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year; that of requiring the student to make original designs and to weave the same.

[COURSES I-3, II-3, III-3, VI-4]

### **Cloth Construction—D-7**

PREPARATION: D-2 OR D-3

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original, the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value, and the discussion of the breaking strengths of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject which is given by class room work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[COURSES I-3, II-3, III-3, VI-4]

### **Decorative Art—D-8**

PREPARATION: D-4

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third year course. It should be understood that work in Decorative Art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[COURSE III-3]

### **Decorative Art for Special Students**

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the Historic styles for all materials—wood, gold, silver, copper, brass, leather, fabrics, wall papers, and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

### **Power Weaving—D-9**

PREPARATION: D-1. TAKEN SIMULTANEOUSLY WITH B-5

In connection with the work in Textile Design and Cloth Analysis, practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines both for cotton and woollen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects:

Loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, centre selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the course of weaving mechanism.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

### **Power Weaving—D-10**

PREPARATION: D-9, D-2 OR D-3

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions, lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[COURSES I-3, II-3, III-3, VI-3, VI-4]

## **LANGUAGE AND HISTORY DEPARTMENT—E**

### **English—E-1**

PREPARATION: A-5

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the English course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition, and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[ALL COURSES]

### **Elementary German—E-2**

This course is intended for first year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

### **Advanced German—E-3**

PREPARATION: E-2

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[COURSES IV-4, VI-4]

### **Elementary French—E-4**

This course is intended for first year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in translation is acquired by a considerable amount of reading from general or scientific sources.

### **Advanced French—E-5**

PREPARATION: E-4

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[COURSES IV-4, VI-4]

### **Industrial History—E-6**

PREPARATION: A-6

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England, and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of today. The course consists of weekly lectures supplemented by text-book reading. Among the topics treated are: natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history, in order that he may have practice in research work and also may continue his training in English.

[ALL COURSES]



## **Economics—E-7**

PREPARATION: E-6

This course consists of lectures supplemented by recitations based upon both the lectures and a text book. The character of the course is descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are: the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest, and profits; business organization; value and price; monopoly; money, credit, and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[COURSES IV-4, VI-4]

## **COTTON DEPARTMENT—F**

### **Cotton Yarn Manufacturing—F-1**

PREPARATION: B-1, B-3, B-7

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows:

#### *Fibre*

Before taking up the details of the operation of manipulating the fibre into yarn a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fibre. Methods employed in cultivating, marketing, grading, and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

#### *Opening and Picking*

Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as Evener, Lap Measuring and Safety Stop Motion, Grids, Cleaning Trunks, Beaters, etc., also operation details which involve the adjustment of waste, drafts and character of laps.

#### *Carding*

The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the student may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, forms a part of the work. The influence of faulty parts, defective conditions and their remedy are included.



### *Drawing*

Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and eveners motions.

### *Roving Processes*

Under this head is studied the various machines known as the Slubber, Intermediate, Fine and Jack Fly Frames. The relative motion of the various parts of these machines are so complex that a good opportunity is here presented to fix in the student's mind the application of certain mechanical principles that have use in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering and under this head is taken up both the Metric and English systems.

### *Ring Spinning and Twisting*

The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travellers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

### *Mule Spinning*

This method of spinning is very different from that of the ring frame and the mechanical details are more complicated. The student is furnished with new means of producing yarns and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the Drawing, Twisting, Backing Off, Winding, together with special motions and devices as are used upon the modern mule.

### *Combing*

This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whitin and Nasmith Combers.

## *Organization*

Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading is also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

## **WOOLEN AND WORSTED YARNS—G**

### **Manufacturing—G-1**

PREPARATION: B-1, B-3, B-7

### *Raw Materials*

A study of raw materials which enter into the manufacture of woollens or worsted yarns or are made into yarns by processes similar to those employed in the manufacture of woollen and worsted yarns, would include Silk, Mohair, Alpaca, Vicuna, Cashmere, Camel's Hair, Cotton, Flax, Hemp, Jute and Ramie. In connection with these are considered Shoddy, Noils, Mungo and Extracts.

### *Wool Sorting*

Familiarity with the various grades and kinds of wool, the physical and chemical structure is obtained by lecture and by actual sorting of fleece wool on the bench under the direction of an experienced wool sorter. The various characteristics and properties are explained, as are also trade terms such as Picklock XXX, XX,  $\frac{1}{2}$ -Blood,  $\frac{3}{8}$ -Blood,  $\frac{1}{4}$ -Blood, Delaine, Braid, etc. Some skill is acquired in the estimation of shrinkage and in judging the spinning qualities.

### *Wool Scouring*

The object of scouring and the methods employed are explained and this involves the consideration of the soaps and chemicals used in washing, also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap, also tests are made to show this effect. At the same time the use of driers, their operation and regulation is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

### *Burr Picking, Mixing and Oiling*

In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of Mixing and Burr Pickers is made clear.

### *Carding*

The different systems of carding wool, depending upon whether it is to be made into woolen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool and the further manufacture of it into yarn serves to fix the principles of carding in the mind of the student, as well as gives him some skill in handling machinery. At the completion of this part of the work he is required to prepare and hand in a full description of the process of carding including working drawings, sketches, etc. to fully explain the machines and the methods.

### *Woolen Mule*

The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as for example, the Backing Off and Winding Motions, the Quadrant, Builder-rail, Faller Regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

### *Top Making and Combing*

This branch takes up, besides the carding of the wool on a worsted card, the preparing processes, also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures and by dismantling and assembling these machines in the laboratories. Later quantities of stock are made into top and then into yarn.

The Noble and Lister combs are studied and the various calculations to determine draft, noiling, productions, etc. are made.

### *Drawing and Spinning*

The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or Open Drawing System or by the French System. The process includes the various machines in the successive steps of making Bradford spun yarn and the functions of the different machines are studied. In the latter or French System the stock is run through the drawing machines and the roving spun into yarn on the French Mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford System is given work on the twistors and the effects that may be produced.

### *Organization*

At the end of the course the lay-out of a properly balanced yarn mill is studied and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[COURSES II-3, III-3, VI-3, VI-4]

## Textile Testing—G-2

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibres, yarns and fabrics. The application of physical laws and methods of measurements, as studied in the course of Physics, are used in the study of physical characteristics of textile material. The work is given to students in advanced courses and consists of lecture and laboratory work. Reports are prepared from each experiment giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may acquire practice and understand the interpretation of data. A special **testing laboratory has recently been constructed** and a considerable number of the best standard fibre, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant so that tests can be made under uniform or standard conditions of humidity and temperature.

## FINISHING DEPARTMENT—H

### Woolen and Worsted Finishing—H-1

PREPARATION: C-I, D-I, D-9

The outline of this course which is given by means of lecture and laboratory work is as follows:

#### *Burling and Mending*

Under this head is taken up for consideration the examination of flannel as it comes from the loom, the construction, use, and location of the perch, the methods used in marking defects, measuring, weighing, and numbering of cloths, also the methods of inspection for fancies, single cloths, and double cloths. The object of burling, mending, and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

#### *Fulling*

This branch covers a study of the conditions of the flannel as it comes from the loom, the influence of oil, size, etc. upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressures of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls, and throat plates.



The theory of felt is taken up and the influence of pressure, moisture, heat, alkali, and acid is considered as well as the hygroscopic and felting properties of different wool fibres. The preparation of the flannel for the mill and the usual methods of determining shrinkages as well as the various methods of soaping are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt as well as the determination of the proper amount of alkali for various goods are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz.: all wool, shoddies, and mixed goods, is studied in class room and by operation in the mill.

The change in weight and strength for each operation are carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet are considered in both class and machine rooms. In each operation the defects likely to materialize are studied as well as the cause thereof, and various methods of modifying or lessening them.

#### *Washing and Speck Dyeing*

This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions, and sours, on the different kinds of goods is made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters and includes methods of preparation, materials used, application and tests required.

#### *Carbonizing*

This is an important branch of finishing and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

#### *Gigging, Napping and Steaming*

The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines, is discussed and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining lustre and the production of permanent finish are considered in connection with steaming and sponging.

#### *Brushing, Shearing and Pressing*

This includes as do the other branches a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. With



the manipulation of the shear comes the matters of setting, grinding, and adjustment. With the brushing machine the effect of steaming and moisture upon the lustre and feel of the goods is shown. A study of the action of the presses, both plate and rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[COURSES II-3, III-3, VI-3, VI-4, IV-4]

## Cotton Finishing—H-2

PREPARATION: C-I, D-I, D-9

The outline of the course in the Finishing of Cotton Fabrics is as follows:

### *Cloth Room*

Instruction of the various goods and the object thereof. Construction of the various types of inspecting and trimming machines.

### *Shearing*

The object. A consideration of the various types of shears for treating one or both sides at the same time, also the use of the usual cleaning devices, such as emery, sand, and card rolls, beaters and brushes. Grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for grey goods.

### *Singeing*

Developing and object of singeing. The construction of singers of all types, and for various purposes. The use of cooling tanks, steaming-devices, rolling and brushing attachments.

Regulation of the flame for various goods and adjustment of the parts. Gas and air pressure, water cooled rolls. The effect of moisture on the cost of singeing. The use of dry cans in connection with singeing. Electric singeing.

### *Washing*

Open width and string washers. Their construction and operation. Soaps, temperature, squeeze rolls. Washing of various goods and the object thereof. Stains.

### *Napping*

The object of napping and the usual method of treating goods. Various types of nappers—Single and Double acting. Felting nappers. Construction, grinding, and adjustment of various types.

### *Water Mangles*

Their object and the construction of various types. Various rolls, iron, husk, etc. Scuthers; their object and constructions.

### *Starch Mangles*

The object and construction of all types of starch mangles for pure starch and filled goods. Various types of rolls, brass, rubber, wood. Action of doctor blades, etc. Regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener, and fillers. The preparation of starch and various methods of application.

### *Dryers and Stretchers*

Both horizontal and vertical, tenter frames, clips. The swing motion and the finishes thus produced. Construction. Spraying machines, belt stretchers, button breakers. Their object and construction.

### *Calenders*

The object and construction of all types, including the regulation of pressure and nips for the production of various finishes. Various types of rolls and their uses, steel, husk, and paper. The use of hot and cold rolls. Chasing, friction, embossing and Schriners calenders, and the various finishes produced by each. Production of watered effects. Beetling machines.

Making up room—yarding, inspecting. Different types of folds. Pressing, papering, marking.

[COURSES I-3, VI-3, VI-4]

## PHYSICAL CULTURE—I-1

This subject is required of all students registered for first year work. The course consists of general athletic exercises with small squads on the campus during the pleasant weather of the fall and spring, and exercise in the school gymnasium during the winter months. The instruction is given by the director of physical culture. Previous to the commencement of the work in the fall, each member of the class is required to submit to a thorough physical examination, a careful record of which is kept. Again at the end of the year another examination is held that progress may be noted.

The student's record depends both upon his regularity of attendance and upon the character of his work. A student who is not regular in attendance or who does not make sufficient progress in the work will be required to repeat the subject during the second year.

[ALL COURSES]

## Evening Classes

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All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a Grammar School are admitted upon certificate. A blank form for this will be found in the back of the catalogue. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the three weeks previous to the opening of the evening school.

The tuition rate for all students who are non-residents of Lowell is \$10.00 per course per year. Students taking two courses or attending courses requiring more than two nights per week are required to pay \$15.00 per year.

All students whether from Lowell or elsewhere taking courses in the Chemistry and Dyeing Department must before entering the laboratory make a deposit as follows:

Course IVa	\$ 5.00 per year
Course IVb, IVc or IVd	\$10.00 per year

This is to cover the cost of laboratory breakage and chemicals, and at the end of the year any unexpended balance is returned or an extra charge made for excess breakage.

The evening classes usually commence in the month of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses. The schedule showing the arrangements of classes for each term will be announced at the beginning of the school year.

Before entering class all students must fill out an attendance card which can be obtained at the office or from the instructors in the various departments. Any student who has filed an attendance card and who wishes to change his course, should notify the office to that effect.

## COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

No certificate will be awarded until all dues to the school have been discharged.

### 1. Cotton Spinning—2 Years

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he



is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

#### **IIa. Woolen Spinning—2 Years**

#### **IIb. Worsted Spinning—3 Years**

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

#### **IIIa. Textile Design—3 Years**

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in



the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

### **IIIb. Freehand Drawing—3 Years**

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

#### **IVa. Elementary Chemistry—2 years**

General Chemistry including Inorganic and Organic. Qualitative Analysis.

#### **IVb. Textile Chemistry and Dyeing—3 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.

#### **IVc. Analytical Chemistry—3 years**

Laboratory Work and Lectures in Quantitative Analysis.

#### **IVd. Textile and Analytical Chemistry—4 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

- Va. Cotton Weaving—1 year
- Vb. Woolen and Worsted Weaving—1 year
- Vc. Dobby and Jacquard Weaving—1 year

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

- Vla. Elements of Engineering—3 years
- Vlb. Mechanical Drawing—3 years
- Vld. Machine Shop Practice—2 years

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one

year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

#### VII. Woolen and Worsted Finishing—1 year

In this course machine work is supplemented by lectures and discussions pertaining to the many finishes given to woolen and worsted fabrics. The action of soaps, water, steam, heat and cold upon wools in cloth or the combination of this fibre with others used in commerce is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics.

## OFFICERS OF ADMINISTRATION AND INSTRUCTION

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### Principal

CHARLES H. EAMES, S. B., Massachusetts Institute of Technology, 1897. Active member of The American Society of Electrical Engineers. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell, and engineer with Stone and Webster, electrical engineers, Boston, Mass.

### Instructors

#### TEXTILE ENGINEERING

GEORGE H. PERKINS, S. B., chief instructor. Massachusetts Institute of Technology, 1899. Associate member American Society of Mechanical Engineers. Experience: Draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood Greene and Co., Boston, Mass.

HERBERT J. BALL, S. B., instructor in mechanical engineering. Massachusetts Institute of Technology, 1906. Experience: Draftsman, Watertown Arsenal.

ULYSSES J. LUPIN, S. B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

ALEXANDER D. DAVIS, B. T. E., instructor in mechanical drawing. Lowell Textile School, 1914. Experience: Lowell Machine Shop; Lowell Bleachery; Boott Mills, Lowell, Mass.; instructor in Textile School, South Manchester, Conn.

EDGAR L. WOODWARD, S. B., Massachusetts Institute of Technology, 1911. Experience: Schedule Man, Boston & Maine Railroad, Billerica Shop, North Billerica, Mass.

CHARLES H. JACK, instructor in machine shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

#### CHEMISTRY AND DYEING

LOUIS A. OLNEY, S. B., M. S., chief instructor. Lehigh University, 1896. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

HOWARD D. SMITH, PH. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor Brown University and Tufts College; instructor Beloit College, Wisconsin.



- ROBERT R. SLEEPER, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz and Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- BERTRAND F. BRANN, S. B., M. S., instructor in chemistry. University of Maine, 1909. Massachusetts Institute of Technology, 1912. Experience: Instructor at University of Maine; Assistant Instructor Department of Research, Massachusetts Institute of Technology.
- RUSSELL B. STODDARD, A. B., instructor in chemistry. Clark College, 1912.

#### TEXTILE DESIGN AND WEAVING

- HERMANN H. BACHMANN, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company, and Smith Webbing Company, Pawtucket, R. I.
- STEWART MACKAY, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- JOSEPH WILMOT, instructor in power weaving and warp preparation. Lowell Textile School, Evening Class, 1908. Experience: United States Bunting Company, Lowell, Mass.; Draper Company, Hopedale, Mass.; Crompton and Knowles Loom Works, Worcester, Mass.
- ANDREW YOUNGER, instructor in Design and Weaving Department. Lowell Textile School, Evening Class, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Co., Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woolen Co., Dedham, Mass.; C. A. Root Mfg. Co., Uxbridge, Mass.
- E. ELIZABETH WHITNEY, instructor in freehand drawing. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching eighteen years.
- EDITH C. MERCHANT, instructor in freehand drawing. Normal Art School, 1908. Experience: Teaching, Evening Drawing School, Lowell, Mass.; Supervisor of Drawing, Pepperell, Mass.

#### COTTON YARNS

- STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.
- LOUIS C. PLAYDON, instructor in cotton spinning. Lowell Textile School, Evening Class, 1914. Experience: Atlantic Mills, Lawrence, Mass.; Pacific Mills, Lawrence, Mass., and Dover, N. H.
- GEORGE GOODCHILD, instructor in cotton spinning, Evening School, Lowell Textile School, Evening Class, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.



#### WOOLEN AND WORSTED YARNS

- EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.
- JOHN N. HOWKER, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from City and Guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Maine; Arlington Mills, Lawrence, Mass.
- JOHN C. LOWE, instructor in woollen and worsted yarns. Lowell Textile School, Evening Class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

#### FINISHING

- ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Canada; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woollen and worsted yarns, Lowell Textile School.
- C. LEONARD GLENN, instructor in finishing. Experience: Dunnell Mfg. Co., Pawtucket, R. I.; U. S. Finishing Co., Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

#### LANGUAGES AND HISTORY

- LESTER H. CUSHING, A. B., Harvard College, 1911.

#### PHYSICAL CULTURE

- RALPH E. GUILLOW, physical director. International Y. M. C. A. Training School, Springfield, Mass., 1910. Ten years' experience in physical culture in various schools and institutions.
- ARCHIBALD R. GARDNER, M. D., medical adviser. Harvard University, 1902.

## ALUMNI ASSOCIATION

The Alumni Association of the School holds its annual meeting and banquet in February of each year at the Hotel Vendome, Boston, Mass.

The membership of the Association is restricted to graduates of the day school. Honorary membership is open to the Board of Trustees, the Faculty and such others as may be elected by the Association.

The officers for the year 1916 are:

President:	William L. Parkis, '09
Vice-President:	Joseph B. Thaxter, '12
Secretary-Treasurer	Arthur A. Stewart, '00

Board of Directors: The President, Vice-President, Secretary-Treasurer, Arthur J. Hennigan, '06, for one year, and Stephen E. Smith, '00, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

## ENTERTAINMENT COMMITTEE

Robert R. Sleeper, '00, <i>Chairman</i>	Royal P. White, '04
Everett B. Rich, '11	George L. Gahm, '06

## OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

## OFFICERS

President:	Harry Buckley, Methuen, Mass.
Vice-President:	James Spurr, Jr., Lawrence, Mass.
Secretary and Treasurer	Stephen W. Bastow, Nashua, N. H.

## BOARD OF CONTROL

President, Vice-President, Secretary, also John Nicoll, Andover, Mass., H. Stewart Redman, Manchester, N. H., Harry Buckley of Methuen, Mass., Samuel Stott, Methuen, Mass., Samuel J. Nichol, Lowell, Mass.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

For information regarding this association please apply to Stephen W. Bastow, Secretary, 90 Abbott St., Nashua, N. H.

## AWARDS FOR PROFICIENCY IN FIRST AND SECOND YEAR CHEMISTRY

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The following is a list of awards made to day students on June 4, 1915, for proficiency in first and second year chemistry, as per Special Awards of Merit on Page 85.

FIRST:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in *First Year Chemistry*.

Awarded to John Francis Fitzgerald

SECOND:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in *First Year Chemistry*.

Awarded to George Henry Johnson.

THIRD:—Ten Dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during the *Second Year*.

Awarded to William John Baker.

FOURTH:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during the *Second Year*.

Awarded to Howard Billings.

Honorable mention of Water Wellington Powers.

The above sum to be invested in books.

## DAY CLASS OF 1915

### Graduates with Titles of Theses

Degrees conferred as follows June 4, 1915:

Edwin Frederick Ernest Cosendai,  
Bachelor of Textile Dyeing.  
"Causes and Prevention of Fires in  
Dry Cleansing Establishments."  
Lowell, Mass.

Frank Robert McGowan,  
Bachelor of Textile Engineering.  
"Comparative Power Tests of a Shoddy Picker with  
Plain and Ball Cylinder Bearings."  
Lowell, Mass.

Julius Ellis Neyman,  
Bachelor of Textile Dyeing  
"Preparation of a Direct Cotton Black starting with  
Primary Coal-tar Derivatives."  
Lowell, Mass.

Edward Rich,  
Bachelor of Textile Dyeing.  
"The Manufactures of Sulphur Dyes."  
Lowell, Mass.

Joseph Warren Sawyer,  
Bachelor of Textile Dyeing.  
Thesis with O. F. Lane.  
Lawrence, Mass.

Diplomas awarded as follows June 4, 1915:

Thomas Harrington,  
Chemistry and Dyeing.  
"The Preparation of R. Salt."  
Cambridge, Mass.

Philip Francis O'Brien,  
Wool Manufacture.  
"The Manufacture of a Worsted Suiting."  
Wayland, Mass.

## EVENING CLASS OF 1915

Certificates awarded as follows, April 14, 1915:

### COURSE Ia—2 YEARS. (Cotton Spinning)

Edwin Moody Fuller	Lowell, Mass.
Frank Oliver Hale	" "
Richard Gilman Hall	" "
Herbert Kenyon	" "
Everett Ronald Mountain	" "
Frank Henry O'Connor	" "
David Pendlebury	" "
Eugene Snickers	Lawrence, "
Samuel James Wood	Lowell, "
	" "

### COURSE Ia—3 YEARS. (Cotton Spinning)

Lester Ambrose Flemings	Lowell, Mass.
George Swift Kyle	" "
Joseph Moss	" "

### COURSE IIa—2 YEARS. (Woolen Spinning)

William Francis Brandy	Lawrence, Mass.
Hartman Frank Schmidt	Lowell, "
Arthur Maud Whitley	" "

### COURSE IIb—3 YEARS. (Worsted Spinning)

James Ernest Birdsall	Lawrence, Mass.
Guy Eugene Branch	" "
Ralph Albert Butland	" "
Edward Thomas Hanley	Forge Village, "
Seward Spencer Leather	Methuen, "
James Henry Maguire	Lowell, "
Miles Henry Smith	Lawrence, "
Milton Carleton Stahl	" "
John William Swift	Lowell, "
Arthur Maud Whitley	" "
Warren Allyn Winslow	Ayer, "

### COURSE IIIa—3 YEARS. (Textile Design)

Henry Atkinson	Lowell, Mass.
Joseph Leroy Ford	Lawrence, "
George William French, Jr.	" "
Walter Jerome Jackson	" "
William Henry Lees	Lowell, "
Harry Allan Luce	" "
Marietta Louise McCartin	" "
Fred Marsden	Lawrence, "
Patrick Francis Scully	Lowell, "
William Fenway Weinhold	Lawrence, "

### COURSE IIIb—3 YEARS. (Freehand Drawing)

George Amedee Bordeleau	Lowell, Mass.
Charles Francis Paul Campbell	" "
Harry Hashmatian	" "
Raymond Andre Richards	" "
Mae Veracunda Smith	" "



# COURSE IVa—2 YEARS. (Elementary Chemistry)

Nathaniel Hale Bonney	Lawrence, Mass.
John Cochrane	Lowell, "
Joseph Michael Halloran	" "
George Raymond Henderson	" "
Harold James Higginbottom	Lawrence, "
Thomas Francis Kelly	Lowell, "
David McGee	" "
Andrew Neel, Jr.	Lawrence, "
Raymond Lawrence O'Brien	" "
Daniel Poor Pike	Wamesit, "
Herbert Eugene Poore	Lawrence, "
George Alexander Preble	Lowell, "
Thomas Calderwood Rodger	" "
Gordon Norrie Smith	Methuen, "
Warren Duncan Stewart	Lowell, "
Henry Kane Torpey	" "
Herman Emil Wilde	Lawrence, "
George Dana Zimmer	Lowell, "

# COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)

Charles William Leonard	Lowell, Mass.
Howard Proctor Shedd	" "

# COURSE Va—1 YEAR. (Cotton Weaving)

Ariston Kimball Barrows	Lowell, Mass.
Peter Francis Garrity	" "
Robert Francis Logan	Lawrence, "
George Arthur Smart	Lowell, "
James Stafford	Lawrence, "
Thomas William Waters, Jr.	" "

# COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)

Ernest Armitage	So. Lawrence, Mass.
Laurie Chadwick	Lawrence, "
William Albert Kannheiser	" "
Harry Lambert	Methuen, "
William Henry Lightbown	North Chelmsford, "
Joseph Roberts	Lawrence, "
William Anderson Shearer	" "
Arthur Fred Stiehler	" "
George Thompson	" "

# COURSE Vc—1 YEAR. (Jacquard Weaving)

Edward James Cox	Lowell, Mass
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# COURSE VIa—3 YEARS. (Elements of Engineering)

Paul Augustine Eichhorn	Lawrence, Mass.
Churchill Gerry	Lowell, "
Alfred Leonard Gustafson	" "
William Edward Porter	" "

# COURSE VIb—3 YEARS. (Mechanical Drawing)

Raymond Francis Ballinger	North Chelmsford, Mass.
Ubaldo Edward Dubois	Lowell, "
William Edward Early	" "
John W. Egan	" "
George James Faneuf	" "
Bert Dunwreath Fernley	" "
John William Gearin	" "
Harold William Goddard	" "
Charles Fredrick Jackson	Methuen, "
George Felix Langevin	North Andover, "
Raymond Clarence Leland	Lowell, "
Lester Charles Merrill	" "
Joseph Leo Regan	" "
Arthur Alexander Simmers	" "
John Joseph Walker	Lawrence, "
Walter Frederick Walworth	" "
	Lowell, "

# COURSE VIa—2 YEARS. (Machine Shop Practice)

James Caldwell	Andover, Mass.
Elphege Henrie Casavant	Lawrence, "
John W. Egan	Lowell, "
Bert Dunwreath Fernley	" "
Arthur Cleophase Gagnon	" "
Andrew Joseph Healy	" "
John Leo Keleher	" "
Charles McGaunn	" "
Theodore McGaunn	" "
James Kemley Nicoll	" "
Ehrich Obst	Andover, "
Harold Pendlebury	Methuen, "
	Lawrence, "

# COURSE VII—1 YEAR. (Woolen and Worsted Finishing)

James Howard Geaney	North Andover, Mass.
Walter Louis Goddard	Lawrence, "
Walter Jerome Jackson	" "
Michael Joseph Lane	" "
Henry Lister	" "
William Francis McGrath	" "
Harold Sidney Sanborn	" "
Patrick Francis Scully	North Andover, "
	Lowell, "

# REGISTER OF DAY STUDENTS 1915 - 1916

## Fourth Year

Name	Course	Address
Adams, Floyd W.	VI-4	Lowell, Mass.
Echmalian, John G.	VI-4	" "
Farnsworth, Harold V.	VI-4	Winchester, "
Forsaith, Ralph A.	VI-4	Nashua, N. H.
Howarth, Charles L.	IV-4	Lowell, Mass.
Irvine, James A.	VI-4	Chicago, Ill.
Lamprey, Leslie B.	IV-4	Lawrence, Mass.
Moorhouse, William R.	IV-4	Winchester, "
Putnam, George I.	IV-4	Boston, "
Richardson, George O.	IV-4	Lexington, "
Riggs, Homer C.	VI-4	South Essex, "
Sanborn, Ralph L.	VI-4	Lowell, "

## Third Year

Albrecht, Charles H.	IV	Dorchester, Mass.
Baker, William J.	IV	West Groton, "
Barlofsky, Archie	VI-4	Lowell, "
Billings, Howard	IV	East Acton, "
Colby, James T.	VI	Manchester, N. H.
Cubberly, Norman P.	VI-4	Malden, Mass.
Cummings, Edward S.	VI	Lowell, "
Davieau, Alfred E.	VI	Cochituate, "
Foster, Boutwell H.	VI-4	North Tewksbury, "
Fuller, Allen R.	IV-4	Dorchester, "
Garmon, Joseph P.	VI-4	Lowell, "
Gerrish, Henry K.	III	" "
Gilmore, Hazel S.	Sp. III	Newton Upper Falls, "
Harris, Lawrence R.	III	Greenwood, "
Holden, Gladys M., A. B.	Sp. IV	North Billerica, "
Molloy, Francis H.	II	Hudson, "
Morrill, Howard A.	VI	Lowell, "
O'Connor, Lawrence D.	VI	Woburn, "
Park, Kenneth B.	IV	Winchester, "
Peabody, Roger M.	II	Everett, "
Perlman, Samuel	IV	Lowell, "
Powers, Walter W.	IV-4	Boston, "
Racicot, Marie E.	Sp. III	Lowell, "
Shaber, Hyman J.	VI	Nashua, N. H.
Sjostrom, Carl G. V., Jr.	III	Ware, Mass.
Sokolsky, Henry	VI-4	Lowell, "
Sturtevant, Albert W.	IV	" "
Tyler, Lauriston W.	II	Haverhill, "
Wood, Lawrence B.	IV-4	Beverly, "
Woods, George W.	IV	Groton, "
Yang, Sih-zung, B. S., M. A.	Sp. I	Shanghai, China

## Second Year

Ashworth, Ralph W.	II	Charlton City, Mass.
Berry, Wilbur F.	II	Worcester, "
Brainerd, Walter E.	IV	Bradford, "
Clark, Earl W.	IV	Salem Depot, N. H.

Name	Course	Address
Conway, Coleman B., Jr., B. S.	Sp. I	Moss Neck, Va.
Deady, William F.	IV	Uxbridge, Mass.
Dennett, Mahlon W.	IV	Winchester, "
de Sa, Francisco	VI-4	Bahia, Brazil
Dimock, Dwight L.	IV	Billerica, Mass.
Evans, Albert H.	VI-4	Lowell, "
Fendel, Frank	IV	Boston, "
Fitzgerald, John F.	IV	Woburn, "
Folkins, Ralph M.	Sp. III	Cambridge, "
Gottesman, Louis	IV	Boston, "
Harlow, Ivan O.	IV	Oakland, Me.
Hart, Arthur N.	IV	Lowell, Mass.
Holden, Harold H.	IV	Fitchburg, "
Johnson, George H.	IV-4	Haverhill, "
Kennedy, Edmund T., A. B.	II	Amsterdam, N. Y.
Lawrence, Harold E.	VI	Melrose, Mass.
Libbee, George C.	IV	Lowell, "
Macdonald, Hector G.	IV-4	Beverly, "
Matthews, Elmer C.	II	Boston, "
Merrill, Gilbert R.	VI-4	Lowell, "
Messer, Raymond B.	I	" "
Miyoshi, Kanae	Sp. I	Isahaya, Nagasaki, Japan
Moore, William J.	IV-4	Lawrence, Mass.
Morris, Merrill G.	IV	Lowell, "
Nelson, Donald M., B. S.	Sp. IV	Chicago, Ill.
Palais, Samuel	IV	Roxbury, Mass.
Parker, Hubert F.	VI	Norwood, "
Ripley, George K., B. S.	II	Troy, N. H.
Roberts, Roscoe O.	I	Lowell, Mass.
Rooney, Henry T.	IV	Lawrence, "
Shine, Timothy C.	IV-4	Lawrence, "
Stevens, Raymond R.	IV	Dracut, "
Stevens, Samuel D., Jr.	II	North Andover, "
Stiegler, Harold W.	IV-4	Lawrence, "
Sullivan, Joseph I.	II	Everett, "
Sunbury, Herbert E.	VI	Wamesit, "
Sutton, Leslie E.	I	Great Barrington, "
Takahashi, Gentaro	Sp. I	Agatsuma, Gummaken, Japan
Wellman, Harvey E., B. A.	IV	Providence, R. I.
Zimmermann, Alexander S.	VI	Lowell, Mass.

### First Year

Ackley, Eugene R.	VI	Nashua, N. H.
Anderson, Arthur J.	IV-4	West Concord, "
Andrews, Freeman W.	IV	Dorchester, Mass.
Berquest, Hugh G.	II	Arlington, "
Bissonnette, Leo. A.	IV-4	Lowell, "
Brainerd, Carroll L.	IV	Bradford, "
Brown, Russell L.	VI-4	Haverhill, "
Cole, Elmer E.	I	South Eliot, Me.
Crippen, Harold E.	I	Adams, Mass.
Davis, Harold E.	II	Franklin, N. H.
Donovan, George, 2nd	I	Somerville, Mass.
Douglas, Walter S.	VI-4	Lowell, "
Eaton, Ralph C.	VI-4	Lexington, "
Everett, Charles A.	IV-4	Lawrence, "
Farley, Mortimer T.	III	Weston, "

Name	Course	Address
Fortin, Adelard J.	VI-4	Lowell, Mass.
Frary, Stanley H.	I	Dover, N. H.
French, Walter B.	VI-4	Lowell, Mass.
Fuller, Samuel L.	Sp. VI	" "
Goodacre, Kenneth R.	VI-4	Wakefield, "
Gooding, Francis E.	IV-4	Lawrence, "
Gould, Norman C.	VI-4	Huntington, "
Grout, Walter T.	II	Andover, "
Gunning, Alfred J.	II	Franklin, "
Hadley, Richard F.	IV	Billerica, "
Hadley, Roger C.	IV-4	" "
Holden, John S.	VI-4	Attleboro, "
Hood, George C.	Sp. IV	Nashua, N. H.
Hosley, Carlton R.	IV-4	Salem, Mass.
Huber, Fred G.	IV	East Northfield, "
Jones, Nathaniel E.	VI-4	Newburyport, "
Jones, Sydney E.	IV	Everett, "
Kaatze, Julius	VI-4	Lawrence, "
Kingston, Norman B.	IV	Wakefield, "
Laurin, Eric T. L.	IV	Lowell, "
Leonard, Bryan	VI-4	East Weymouth, "
Locke, Arthur C.	IV	Winchester, "
Longbottom, Parker W.	IV	Sanford, Me.
McCann, Henry M.	III	Pawtucket, R. I.
McClellan, Charles W.	IV	Fall River, Mass.
McEnany, Charles H.	Sp. III	Dorchester, "
Mathews, Carl E.	I	South Berwick, Me.
Mauersberger, Herbert R.	III	Passaic, N. J.
Mellor, J. Bertram	III	Newton, "
Moore, Otis R.	VI-4	Laconia, N. H.
Moore, Paul H.	IV	Concord, "
Moorhouse, Dan W.	IV-4	East Bridgewater, Mass.
Morrell, Willard B.	VI	Wayland, "
Morse, Allyn J.	IV	Lowell, "
Mullaney, John F.	VI	" "
Parker, Lester E.	VI-4	Whitman, "
Peirce, Charles	III	Lowell, "
Pender, John E.	IV	Ayer, "
Pitman, Charles J.	II	Laconia, N. H.
Plaisted, Webster	II	Arlington, Mass.
Plummer, Stanley R.	III	Melrose, "
Pratt, Donald H.	IV	Lowell, "
Rider, William J.	VI-4	Danbury, Conn.
Roberts, Herbert C.	IV	Shelton, "
Ross, Edward S.	II	Boston, Mass.
Russell, John W.	Sp.	Lawrence, "
Sanborn, Elmer E.	—	Franklin, N. H.
Sanborn, Frank M.	VI-4	Kennebunk, Me.
Schmiedel, Alfred G.	Sp. I	Brooklyn, N. Y.
Shepard, Howell F.	I	Amherst, Mass.
Sosnowski, Jack N.	III	Boston, "
Sullivan, Walter J.	IV	Ayer, "
Todd, Walter E.	III	Webster, "
Wells, Ai E.	VI-4	Lowell, "
White, Harold J.	IV-4	Shrewsbury, "
White, Harold M.	II	South Portland, Me.
White, Philip J.	IV-4	Lowell, Mass.
Winn, Charles L.	II	Roxbury, "



# REGISTER OF EVENING STUDENTS

1915 - 1916

## Explanatory Note

Course Ia Cotton Spinning  
 Course Ib Knitting  
 Course IIa Woolen Spinning  
 Course IIb Worsted Spinning  
 Course IIIa Textile Design  
 Course IIIb Freehand Drawing  
 Course IVa Elementary Chemistry  
 Course IVb Textile Chemistry and Dyeing  
 Course IVc Analytical Chemistry  
 Course IVd Textile and Analytical Chemistry  
 Course Va Cotton Weaving  
 Course Vb Woolen and Worsted Weaving  
 Course Vc Jacquard Weaving  
 Course VIa Elements of Engineering  
 Course VIb Mechanical Drawing  
 Course VIc Machine Shop  
 Course VIc Mathematics  
 Course VII Woolen and Worsted Finishing

## Post Graduates

Name	Course	Address
Gagnon, Arthur C.	VIc	Lowell, Mass.
Keleher, John L.	VIc	" "
McElroy, Claude R.	VIc	" "
McGaunn, Charles	VIc	" "
McGaunn, Theodore	VIc	" "
Obst, Ehrich	VIc	Methuen, "
Richards, Raymond A.	IIIb	Lowell, "
Smith, Mae V.	IIIb	" "

## Third Year

Barnes, Hammond	IIIa	Lowell, Mass.
Campbell, Thomas J.	IIIb	" "
Caswell, Alfred M.	VIa	" "
Chandler, Walter H.	VIa	North Billerica, "
Charbonneau, Marie A.	IIIb	Lowell, "
Cheetham, James A.	VIa	" "
Cheney, Raymond S.	VIa	Lawrence, "
Coburn, Walter F.	VIb	Lowell, "
Donahue, William E.	VIa	" "
Driscoll, Charles E.	VIa	Lawrence, "
Durgin, Edward F.	VIa	" "
Dyson, John J.	VIa	" "
Fagan, Thomas M.	VIb	Lowell, "
Fielding, Charles H.	VIb	Chelmsford, "
Fitzgerald, Thomas J.	Ia	Lowell, "
French, Walter B.	VIa	" "
Galle, Carl W.	VIb	Lawrence, "

Name	Course	Address
Gaudette, Eugene O.	Via-VIb	Lowell, Mass.
Gaulin, Achille G.	VIb	" "
Gile, Harold E.	IVb	Lawrence, "
Gilley, Fred S.	IIIa	Somerville, "
Grant, Royal E.	VIa	Lowell, "
Guenard, Julia A.	IIIb	" "
Heath, Thomas A.	VIb	" "
Hendricks, Thomas A.	VIb	" "
Hodge, Harold B.	VIb	North Chelmsford, "
Johnson, Alfred N.	VIb	Lowell, "
Laporte, Elsie	IIIb	" "
Larue, Isabella G.	IIIb	" "
Lund, Stanley W.	VIb	Lawrence, "
McCann, Eugene J.	VIa	Lowell, "
McKittrick, Percy A.	VIa	" "
Mosher, Chester L.	VIb	" "
Murphy, John	VIb	" "
Ogden, Frank	IIIa	" "
Orr, Wm. J.	IIIa	Andover, "
Ortel, Charles	VIa	Lowell, "
Pendlebury, David	Ia	Lawrence, "
Perron, Francis J.	IIIa	North Andover, "
Playdon, Roy A.	IIb	Methuen, "
Rhodes, William H.	IIIa	Ward Hill, "
Ritchie, Charles L.	VIa	North Billerica, "
Scott, George W.	IIIa	Andover, "
Shaber, Hyman J.	Ia	Nashua, N. H.
Shaw, Albert	VIb	Lowell, Mass.
Silliter, Gilbert	VIa	Methuen, "
Snickers, Eugene	Ia	Lowell, "
Sorenson, David P.	IIIa	Dracut, "
Stewart, George	VIa	Lowell, "
Sullivan, Joseph D.	IIIa	" "
Tierney, Urban L.	VIa	" "
Wainwright, Harold	IVb	Lawrence, "
Waring, Joseph	VIa	Methuen, "
Wiesberg, Harry A.	VIb	Lawrence, "
Wood, Samuel E.	Ia	Lowell, "

## Second Year

Allton, Donald H.	IVa	Nashua, N. H.
Atkinson, Reginald	IVb	Lowell, Mass.
Axelrod, Benjamin	VIa	Lawrence, "
Bacon, Charles N.	IIIa	Winchester, "
Bamford, John T.	IIIa	North Andover, "
Bateson, George	VIId	Andover, "
Bean, Winthrop S.	IVa	Lowell, "
Beaulieu, William E.	VIb	" "
Bennett, John W.	IIIa	Methuen, "
Benson, George E.	Ia	Lowell, "
Billings, Rupert F.	IVa	" "
Bordeleau, Georges A.	IVa	" "
Bottomley, Wilfred	VIa	Lawrence, "
Brandy, William F.	IIb-IVb	" "
Briggs, William H.	IIIb	So. " "
Brown, James H.	VIId	Forge Village, "

Name	Course	Address
Bryden, Frederick A., Jr.	IVa	North Andover, Mass.
Burckel, Henry E.	VIa-VIb	Lawrence, "
Burke, John J.	IVa	Lowell, "
Burns, Robert H.	Ia	" "
Cahill, Thomas P.	VIId	" "
Cardell, Roswell E.	VIb	" "
Cartwright, Alexander	IIIb	" "
Chambers, Frederick	IIIa	Lawrence, "
Chandler, George E., Jr.	IIIa	Lowell, "
Charbonneau, Alice M.	IIIb	" "
Cheney, James R.	VIa	" "
Chicken, Harold M.	Ia	Lawrence, "
Clough, Herschel G.	IVa	Lowell, "
Coates, Alfred	VIa	Andover, "
Coburn, Elmer R.	IVa	Methuen, "
Cochrane, William D.	IVc	Lowell, "
Collins, Albert C.	VIb	" "
Conley, Leander F.	IVa	" "
Coolens, Julvin J.	IIIa	" "
Crompton, George E.	IVa	" "
Crumbie, Charles	IIb	" "
Cubberly, Norman P.	Ia	" "
Davieau, Alfred E.	Ia	" "
Davis, Alfred A.	VIb	" "
Desaillier, Adolphe	VIId	" "
De Spencer, John	VIb	Lawrence, "
Desrochers, George E.	VIa	Lowell, "
Doole, James E.	IVa	" "
Doregan, John A.	IIIa	Malden, "
Drain, Michael F.	IVa	Lowell, "
Flanders, George A.	VIb	" "
Flathers, George J.	IVa	Lawrence, "
Fontaine, George E.	VIId	Lowell, "
Forsythe, William J.	VIId	Andover, "
Francis, Thayer	IIb	Lowell, "
Galle, Carl W.	VIb	Lawrence, "
Gerry, Churchill	IVa	Lowell, "
Gilley, Fred S.	IIb	Somerville, "
Gleason, Leonard T.	VIId	Lowell, "
Glennon, Madge J.	IIIb	Lawrence, "
Grady, Anna M.	IIIb	Lowell, "
Guenard, Julia A.	IIIb	" "
Gunther, George A.	IVa	Dracut, "
Hall, Harry W.	VIb	Lowell, "
Hall, Sydney H.	VIa	" "
Hall, William H.	IIIa	" "
Hartwell, Marcus H.	IIIa	" "
Hayward, Harry J.	Ia	Lawrence, "
Heavey, Thomas J.	IVa	Tewksbury, "
Hedrick, Clifton F.	Ia	Lowell, "
Hendry, John	IIb	Lawrence, "
Herron, Alexander T.	IVb	" "
Hibbert, George E.	IIIa	Lowell, "
Higginbottom, Joseph J.	VIId	" "
Hinckley, Daniel W.	IIIa	" "
Hockmeyer, Clive E.	IVa	" "
Hodgkins, Richard D.	Ia	" "

Name	Course	Address
Houndre, Eustace J.	Ia	Lowell, Mass.
Howker, John	IIIa	" "
*Howson, John S.	IVa	" "
Johnson, Joseph E.	VIa	" "
Jubenville, Joseph D.	VIb	" "
Kelly, Henry J.	VIa	" "
Kent, Asa R. E.	IIb	Lawrence, "
Kiessling, Robert H.	Ia	Roslindale, "
Labrie, Hermina	IVa	Lowell, "
Ladd, Frederick D.	VIb	" "
Lambert, Thomas A.	VIb	" "
Lane, Lewis D.	VIb	Lawrence, "
Langevin, George F.	VIa	Lowell, "
LaVigne, Andre J.	VIb	" "
Lawrence, Abbott	VIb	" "
Lawrence, Harold E.	Ia	" "
Leaver, Harry	IVa	Methuen, "
Lees, Fred	IVa	Nashua, N. H.
Lowney, May E. P.	VIa	Lowell, Mass.
Lutz, Alwin	VIa	Lawrence, "
Lynch, John	VIb	" "
McCarthy, Joseph A.	IVc	North Andover, "
McCutcheon, Blanche	IIIb	Lowell, "
McElroy, William H.	VIa	" "
MacGeoch, James A.	IIIa	Lawrence, "
McLaughlin, Lawrence H.	VIb	Lowell, "
McNabb, Alice M.	IIIb	" "
Mears, Lewis N.	IVb	Ballardvale, "
Meehan, William F.	VIb	Lowell, "
Meinelt, Theodore E.	VIa	Lawrence, "
Messinger, Adin F.	VIa	Lowell, "
Miyoshi, Kanae	Ia-IIIa	" "
Morley, Ernest C.	IIb	Lawrence, "
Mortensen, Astor H.	IIIa	Winchester, "
Naud, Marie A.	IIIb	Lowell, "
Neilson, Alexander S.	IIb	" "
Nable, James G.	VIb	Lawrence, "
O'Brien, John A.	VIb	Lowell, "
O'Brien, Richard C.	IIb-IIIa	Roxbury, "
O'Brien, Richard J.	VIa	Lawrence, "
O'Connor, John J. F.	VIb	Lowell, "
O'Connor, Lawrence D.	Ia	Lowell, "
O'Connor, Thomas	IIIb	" "
Olson, Gustaf	Ia	" "
Parker, Charles L.	IVa	Lawrence, "
Payette, Laura	IIIb	Lowell, "
Pearson, Erwin A.	VIb	" "
Pearson, Mortimer	VIb	" "
Peel Tom	VIb	" "
Preston, David	IVa	North Andover, "
Prince, Warren F.	Ia	Andover, "
Protopapas, Taxiarchis L.	VIb	North Chelmsford, "
Quance, Alfred	IIIb	Lowell, "
Raney, Walter A.	IVa	Methuen, "
Ready, William C.	VIa	Lowell, "
	VIb	" "

\*Deceased

Name	Course	Address
Roberts, Elliott B.	VIb	Lowell, Mass.
Roberts, Kenneth B.	VIb	" "
Rourke, Lillian M.	IIIb	" "
Rugg, Roscoe E.	VIa	" "
Sawyer, Samuel	VIa	" "
Schultz, Hughey B.	VIb	Lawrence, "
Schwarzenberg, Raymond C.	VIb	" "
Silk, Percy B. S.	VIb	Lowell, "
Smith, Edwin H.	IVa	Lawrence, "
Smith, Joseph	VIb	Lowell, "
Smith, Lewis P.	IVa	" "
Spillane, James F.	VIa	" "
Stokham, Ernest F.	IVc	" "
Sullivan, Michael	VIa	" "
Taff, Joseph C.	VIa	" "
Takahashi, Gentaro	Ia-IIIa	" "
Taylor, Robert M.	IIIa	West Somerville, "
Tetreault, Henry B.	IIIb	Lowell, "
Thyng, Thomas C.	VIa	Lawrence, "
Toohy, Loretta	IIIb	Lowell, "
Tremblay, Joseph A.	IVa	" "
Tucker, Charles L.	Ia	" "
Tucker, William W.	Ia	" "
Upton, George H.	VIa	" "
Venner, Fred J.	IIIb	" "
Wainwright, Thomas	IIIb	Lawrence, "
Wallwork, Charles M.	IIIb	Lowell, "
Walsh, John S.	Ia	" "
Ward, William H.	IIIa	" "
Welcome, Harold A.	VIb	" "
West, Richard E.	IVa	" "
Wilkinson, William L.	IIIa	North Andover, "
Wilton, George H.	IIIa	" "

### First Year

Ackley, Clarence E.	VIa	Lowell, Mass.
Alexander, James	VIa	" "
Allan, James, Jr.	IIa	" "
Allard, Damase G.	VIb	" "
Almstrom, August S.	VIb	" "
Anderson, Walter J.	VIa	Lawrence, "
Andrews, Freeman W.	VIe	Lowell, "
Andrews, Philip A.	VIa-VIb	Nashua, N. H.
Ashton, Howard B.	VIb	Lowell, Mass.
Ashton, Stephen	IVa	" "
Ashworth, Richard	IIIa	North Andover, "
Austin, Allbin McM.	VIb	Dracut, "
Auttelet, Albert J.	VIb	Lowell, "
Axon, Wilfrid T.	IIIb	" "
Bachmann, Walter A.	IIIa	Lawrence, "
Balfour, William J.	Ia	Bedford, "
Ballinger, Raymond F.	VIa	North Chelmsford, "
Bangs, Harry O.	IIIa	Shirley, "
Banks, Jonas	IIIa	Lowell, "
Baribeau, Joseph P.	IIIb	" "
Barnard Dwight L.	VIa	" "



Name	Course	Address
Barnes, Lawrence G.	IIa	Lawrence, Mass.
Barrows, Ariston K.	Ia	Lowell, "
Barry, Alma M.	IIIb	" "
Basnett, Joseph E.	VIa	" "
Battles, Thomas E.	VIb	Lawrence, "
Batty, Wilfred L.	IVa	Methuen, "
Baxter, Walter	Vb	" "
Bell, Robert J.	IIIb	North Andover, "
Bellefeuille, Alfred J.	VIa	Lowell, "
Bellerose, Denis L.	VIb	" "
Bengtson, John A.	VIb	West Chelmsford, "
Benson, George E.	Ia	Lowell, "
Berger, Lionel	VIa	" "
Bergsten, Frank	VIb	Chelmsford, "
Bigelow, Ernest Q.	VIb	Pelham, N. H.
Birdsall, James E.	Vb	Lawrence, Mass.
Bishop, Louis J.	Vb	Haverhill, "
Bishop, Stephen J., Jr.	VIa	" "
Black, David E.	IVa	Lowell, "
Blais, Raoul J.	VIa	" "
Bodkin, John	VIa	" "
Boesch, Arthur H.	VIa-VIb	" "
Boland, Patrick J.	VIa	" "
Boucher, Alfred H.	IIIa	" "
Boucher, Emile	Ib	" "
Bourque, Joseph E.	VIa	" "
Bourque, Ouida M.	IIIb	" "
Bouthillette, Jean	VIb	" "
Bowles, Willis H.	Va	" "
Boyle, John E.	Ia	" "
Bradley, Chester J.	VIb	" "
Branch, Guy E.	Vb	Lawrence, "
Briggs, Harold L.	Va	Lowell, "
Britton, Everett W.	VIa	" "
Broadbent, Arthur	IIIa	Methuen, "
Brophy, Ada F.	IIIb	Lowell, "
Brophy, Margaret L.*	IIIb	" "
Brosnan, James F.	VIa	" "
Brothers, Henry	IIa	Methuen, "
Broughton, Frederick	IIIa	Lawrence, "
Bruce, Walter A.	VIa	Lowell, "
Brun, Anthony E.	VIa	" "
Burns, William J.	VIa	" "
Butland, Forrest H.	IIIb	Lawrence, "
Bzoski, John	Vb	Lowell, "
Bzoski, Stanley	VIa	" "
Cahill, Gerald J.	VIb	" "
Callahan, Frank J.	VIb	" "
Cameron, Fred M.	IIIa	" "
Campbell, Alexander	VIa	Lawrence, "
Campbell, Charles F. P.	VIb	Lowell, "
Campling, Walter A.	IVa	Lawrence, "
Carden, Thomas F.	VIa	Lowell, "
Carels, Jules	IIIa	Lawrence, "
Carey, William H.	VIb	Lowell, "
Carney, William H.	VIa	" "
Carolan, Edward J.	Vb	" "

Name	Course	Address
Carroll, Thomas M.	VId	Lowell, Mass.
Carruthers, Joseph, Jr.	VId	" "
Carter, Raymond H.	VIa	North Billerica, "
Cassidy, John F.	IIIa	Lowell, "
Cassidy, Michael	Vb	" "
Cawley, John J. A.	VIa	" "
Chadwick, Richard G.	VIb	" "
Chadwick, Robert H.	VIa	" "
Chandler, Alfred E.	VId	" "
Chandler, George E., Jr.	Va	" "
Chapman, Fred U.	IVa	" "
Charbonneau, Ora	IIIb	" "
Charette, Joseph A.	VIa	" "
Charlton, Percy A.	IIIb	North Andover, "
Cheetham, James A.	VIe	Lowell, "
Cheetham, John J.	VIe	" "
Chenelle, Joseph	VIb	" "
Cheney, Harold G.	VId	" "
Chevalier, Paul G.	VIb	" "
Choquette, Ephraim J.	VIb	" "
Christiaens, Oscar S.	Vb	" "
Cinqmars, Lec	IIIb	" "
Clark, Harold S.	IVa	" "
Clohesy, Cornelius M.	Vb	" "
Coburn, Osmond E.	Ia	" "
Coburn, Walter F.	VIa	" "
Collins, Frank J.	VIb	" "
Collins, Thomas M.	VIa	" "
Colman, Leon T.	IIIa	Lawrence, "
Conaton, Thomas J.	Ia-IIIa	Lowell, "
Conway, Edward W.	VIa	" "
Coolens, Leon G.	Vb	" "
Corey, Henry G.	VIb	" "
Cote, Irene B.	VIb	" "
Cote, Joseph F.	VIa	" "
Cote, Robert E.	VId	" "
Coyle, Thomas P.	Ia	" "
Crandall, Stanley M.	VIe	" "
Craven, Harry	VII	Methuen, "
Cronshaw, Lillian	IIIb	Lowell, "
Cross, James H. M.	IIb	West Newton, "
Crowley, Harold F.	VIa	Lowell, "
Culbert, Helena M.	IIIb	" "
Damon, Walter L.	IIIb	" "
Dana, Clarence A.	IIIa	" "
Davidson, Carl E.	Ia	" "
Davis, Alfred A.	VId	" "
Davis, Ervin	IIb	Lawrence, "
Davis, Gardner	IIIa	North Andover, "
Davis, Harold E.	VIe	Lowell, "
Dawson, Walter F.	IVa	" "
Dawson, William S., Jr.	VIa	" "
Denault, Joseph M.	VIb	" "
Deziel, Rene A.	VIa	" "
Dillon, Harold B.	VId	" "
Dion, Rudolph O.	VId	" "
Dixon, Bertrand E.	VIa	Collinsville, "

Name	Course	Address
Donahue, Frank P.	Ia	Lowell, Mass.
Donahue, William E.	VIc	" "
Donohue, William H.	IIIa	" "
Donovan, David A.	VIId	Methuen, "
Doran, George H.	VIa	Lowell, "
Doran, Thomas H.	VIId	" "
Downs, Thomas	VIa	" "
Dowrey, Charles E.	VIIb	" "
Drapeau Leo L.	IIIb	" "
Dube, Joseph R.	VIa	" "
Dubois, Ubald E.	IVa	" "
Dulligan, John H.	VIa	" "
Duncan, Forrest J.	VIIb	Lawrence, "
Dupee, Charles F.	IIIa	Lowell, "
Dupuis, Pierre E.	Ib	" "
Dwyer, John F.	VIIb	" "
Eastwood, Herbert W.	IIb	Lawrence, "
Ecklund, Eric B.	VIa	Lowell, "
Egan, John W.	VIa	" "
Engel, Chester W.	VIa	" "
Entwistle, Frederic T.	VIa	" "
Erickson, Arthur W.	VIa	" "
Espinola, Manuel J.	VIa	" "
Everett, Charles A.	VIc	Lawrence, "
Farley, George	IIb	Lowell, "
Farr, Clayton F.	IVa	" "
Fiedler, Edwin B.	VIId	Methuen, "
Field, David P.	Ia	Somerville, "
Finkelsten, Nathan	Vb	Lawrence, "
Finnegan, Cornelius T.	IIIa	Lowell, "
Fitz, Irving S.	IIb-IIIa	Winthrop, "
Fitzgerald, William E.	VIa	Lowell, "
Flanagan, William J.	VIa	" "
Flanders, George A.	Ia	" "
Flynn, John L.	Ia	" "
Flynn, Walter	VIa	" "
Fogg, Arthur E.	VIIb	" "
Fortier, Alderic W.	IIIa	" "
Foss, Frank E.	VIa	" "
Fournier, Francois	IIIb	" "
Francis, Thayer	IIb	" "
Frank, Merrill	VIa	" "
French, William A.	VIIb	" "
Fuller, Edwin M.	IVa	" "
Furey, William F.	VIa	" "
Gagnon, Marie C.	IIIb	" "
Gallagher, Charles F.	VIa	" "
Gallagher, Edward J.	Ia-Va	Quincy, "
Gardiner, Thomas A.	VIa	Lowell, "
Garritty, Peter F.	IIIa	" "
Gaudes, Paul E.	IIIa	Methuen, "
Gaudette, Aurore L.	IIIb	Lowell, "
Gauthier, Joseph	VIa	" "
Gelinas, Anthony J.	VIa	" "
Gelineau, Charles A.	VIa	" "
Gelineau, George A.	VIa	" "
Geoffroy, Antoinette	IIIb	" "

Name	Course	Address
Geoffroy, Blanche A.	IIIb	Lowell, Mass.
Gervais, Armand S.	VI d	" "
Gesing, Roland M.	VII	Lawrence, "
Gill, John T.	VIa	Lowell, "
Goodwin, Wesley C.	VI d	" "
Gordon, Lloyd H.	VI e	" "
Gosselin, Joseph P.	Va	" "
Goulet, Joseph A.	VI d	" "
Gow, Robert, Jr.	IVa	" "
Grady, Margaret B.	IIIb	" "
Grant, Royal E.	VI e	" "
Graves, John F.	VIa	" "
Green, Howard B.	VI d	" "
Greenhalgh, Frank G.	IIIa	" "
Greenwood, James W.	VIa	" "
Greenwood, William	VI b	" "
Greenwood, William S.	IVa	" "
Grocock, Joseph F.	IIIa	Boston, "
Grons, Edward	IIIb	Lowell, "
Grout, John W.	IIb	Andover, "
Gunning, Alfred J.	VII	Lowell, "
Haithwaite, Albert	Va	" "
Haithwaite, George Q. R.	Va	" "
Hale, Frank O.	IIIa	" "
Hall, Richard G.	VIa	" "
Halloran, Joseph M.	IVc	" "
Halstead, Albert R.	VII	Lawrence, "
Hamel, Herbert S.	VI d	Lowell, "
Hamilton, Birger E.	IVa	" "
Hamilton, William G.	IIIa	Lawrence, "
Hanson, David H.	VIa	Lowell, "
Hanson, Winfield S.	IVc	" "
Harlow, Ivan O.	IVb	" "
Harrall, Shepard	Ia	" "
Harrison, Franklin	IIb	Methuen, "
Hartley, Thomas L.	IVa	Lowell, "
Hartwig, Albert E.	VIa	Lawrence, "
Hayward, Charles A., Jr.	VIa	Lowell, "
Hayward, Clarence F.	IIIb	" "
Hedman, George	VIa	" "
Heeley, George E.	Va	" "
Henderson, George R.	IVb	" "
Herbert, Chester D.	VI b	" "
Herlihy, John J.	VIa	" "
Hession, James J.	VIa	" "
Higginbottom, Harold J.	IVb	Lawrence, "
High, Reynold G.	VI b	Methuen, "
Hill, Chester E.	VI b	Lowell, "
Hill, Raymond A.	IVa	Methuen, "
Hines, Edward J.	VIa	Lowell, "
Hodge, Harold B.	VI e	North Chelmsford, "
Hodgkins, Richard D.	Ia	Lowell, "
Hodgson, Thomas B.	VIa	" "
Hoh, Clemens C.	IIb	Methuen, "
Hornby, William A.	VI b	Lowell, "
*Howson, John S.	IVb	" "
Hoyle, Herbert	VI b	Lawrence, "

\*Deceased

Name	Course	Address
Hubert, Arthur H.	VIb	Lowell, Mass.
Hughes, Thomas A.	VIa	" "
Hume, William	IIa	South Lawrence, "
Hutton, Thomas V.	IVa	Lowell, "
Innes, Archie K.	IVa	Lawrence, "
Innes, James	IIb	" "
Ingle, Ernest	Va	Lowell, "
Jackson, George T.	VII	North Andover, "
Jackson, John L.	IIIa	Lawrence, "
Jameson, Charles A.	VIb	Lowell, "
Jellison, Sherman R.	VIa	" "
Jenkins, Andrew G.	VIe	" "
Jennings, Joseph C.	VIb-VIe	" "
Johnson, Albert	IVa	" "
Johnson, Charles B., Jr.	IIb-IIIa	" "
Jubinvillle, Romeo J.	VIb	" "
Kannheiser, Frank J.	IVa	Lawrence, "
Kearn, William H.	IVa	Lowell, "
Kearney, James J.	VIb	" "
Keefe, Michael A.	VIa	" "
Keenan, James T.	VIa	" "
Keisling, William	Vb	North Andover, "
Kellett, Harold I.	IIIa	Lawrence, "
Kelly, Fred J.	VIb	Lowell, "
Kelly, Thomas F.	IVc	" "
Kelly, William A.	IIIb	" "
Kenefick, Archibald E.	VIa	" "
Kennedy, Edmund T.	IIb	" "
Kennedy, Leo	VIb	" "
Keohane, Jeremiah J.	VIb	" "
Kershaw, Fred	IIb	Lawrence, "
Ketcham, Fred O.	VIb	Lowell, "
Kiessling, Robert H.	IIb	Roslindale, "
Kilroy, John J. F.	IVa	Lowell, "
Kirkeby, Solon W.	VIb	" "
Kivlan, Martha L.	IVa	" "
Knowles, Edson R.	VIb	" "
Knowles, James M.	IVa	" "
Krensel, Walter	VIa	Lawrence, "
Labatte, Philomena U.	IIIb	Lowell, "
Labrecque, Andrew M.	VIb	" "
Lachance, Lewis N.	VIb	" "
Lacoste, Elmer J.	VIa	" "
Lafond, Corliss	VIb	" "
Lakin, Edward C.	VIa-VIb	North Chelmsford, "
Lakin, Leroy T.	VIb	" "
Lamarre, Yvonne A.	IIIb	Lowell, "
Lambert, Adelard J.	VIb	" "
Lambert, Lulu M.	IIIb	" "
Lamoureux, Georges	VIb	" "
Lane, Ernest	IIb	Lawrence, "
Lanoix, Wilfred O.	Va	Lowell, "
Lanoue, Edgar P.	VIa	" "
Lapham, Nathan G.	IIIa	" "
LaPorte, Evelyn E.	IIIb	" "
Laporte, Joseph	VIa	" "
Lavery, Henry J.	VIa	Andover, "



Name	Course	Address
Lawton, John P. R.	VIe	Lowell, Mass.
Leahy, Patrick	VIa	" "
Learned, Frank E.	IIIa	Methuen, "
Leaver, Frederick W.	Ia	" "
Lewis, Charles S.	VI d	Lowell, "
L'Heureux, Joseph L.	VIB	" "
Liacopoulos, Constantine P.	VIa	" "
Lightbown, William H.	IIb	North Chelmsford, "
Little, Herbert C.	Ia	Lowell, "
Livesey, John	VI d	" "
Locke, Arthur C.	VIa-VIe	" "
Locke, Sydney	VIa	Lawrence, "
Logan, Robert F.	IIIa	" "
Loneragan, Emma J.	IIIb	Lowell, "
Lorigan, Charles J. W.	VIa	" "
Low, James	VIa	Andover, "
Lowe, Enos, Jr.	IIIa	Lawrence, "
Lowe, John C.	Vb	Methuen, "
Lowney, May E. P.	VIB	Lowell, "
Lunan, Karl S.	VIe	" "
Lyons, Edgar A.	IIIa	Methuen, "
McArdle, James J.	VIB	Lowell, "
MacAusland, Ray E.	VIa	" "
McCann, George F.	IIIb	" "
McCann, George J.	VIB	" "
McCarthy, Mary V.	IIIb	" "
McClellan, Charles W.	VIe	" "
McClellan, John	VIa	" "
McCord, Colin C.	VIB	" "
McCullah, Mary E.	IIIa	North Billerica, "
McDermott, James	VII	Methuen, "
McDermott, James C.	VIB	Lowell, "
McDermott, Joseph M.	VIa	" "
McDermott, Thomas R.	IVa	" "
MacDonald, Eleanor R.	IIIb	" "
McDonald, Harold J.	Ia	" "
MacDonald, John F.	IIIb	" "
McDougall, Albert T., Jr.	VIB	" "
McEnany, Charles H.	VIe	" "
MacFadyen, Neil L.	VIB	" "
McGill, Charles F.	IIIa	" "
McGill, Francis J. A.	IVa	" "
McGowan, Henry E.	VIB	" "
McIntyre, William D.	IIIa	Ballardvale, "
McKay, Frederick J.	IVa	Lawrence, "
MacKay, James S.	Va	Lowell, "
MacKenney, Harold E.	VIB	" "
McLean, Alick McD. S.	IIb	Lawrence, "
MacLean, Eliot B.	VIB	Lowell, "
McNamara, James	VIa	" "
McNulty, James A.	VIa	Lawrence, "
Magee, William J.	IVa	" "
Maginnis, John J.	IIIa	" "
Mahoney, John	VIa	Lowell, "
Malenfant, James	IIIb	" "
Malenfant, Leo J.	IIIb	" "
Malley, Albert J.	IIIb	Lawrence, "

Name	Course	Address
Malloy, Raymond	VIa	Lowell, Mass.
Maloney, Earl T.	VIa	" "
Manchester, Royal J.	VIa	" "
Masse, Edmond J.	VIa	" "
Massicotte, Armond J.	VIId	" "
Mathews, William T.	Ia	" "
Matthews, Elmer C.	IIb	" "
Mauersberger, Herbert R.	VIe	" "
May, Lester G.	IVa	" "
Mealey, John	VIa	" "
Meehan, Frank L.	VIa	" "
Meehan, John F.	VIa	" "
Meehan, Thomas F.	IIIb	" "
Meinelt, Walter A.	Ia	Lawrence, "
Messinger, Adin F.	VIa	Lowell, "
Michalapoulos, George	IVa	" "
Millar, David	IIIb	Lawrence, "
Mills, Forrest A.	VIId	North Chelmsford, "
Mineau, Albert J.	IIIb	Lowell, "
Mochrie, William B.	VIb	" "
Monson, John E.	IVa	" "
Montgomery, William S.	IIb	Roxbury, "
Moran, Joseph A.	VIa	Lowell, "
Moore, Andrew G.	Ib	" "
Morin, Alphonse W.	VIId	" "
Morrill, Austin R.	VIId	" "
Morris, Ernest S.	VIId	" "
Morris, James A.	VIa	" "
Morris, William J.	IIIa	Lawrence, "
Morrison, George	VIa	Lowell, "
Morrison, Nathan H.	VIa	" "
Morrow, George W.	IVa	Lawrence, "
Morss, Francis B.	VIa	Lowell, "
Mosher, Chester L.	VIa	" "
Moss, Joseph	VIa	" "
Mountain, Everett R.	IIIa	" "
Muldoon, Henry	VIb	" "
Mulligan, John J., Jr.	VIId	" "
Mulreany, John F.	IVa	Lawrence, "
Munroe, Ernest	Ib	Methuen, "
Murningham, John J.	VIa	Lowell, "
Murphy, Daniel J., Jr.	VIb	" "
Murphy, Robert P.	IVa	Tewksbury, "
Murphy, Thomas J.	VIId	Lowell, "
Murray, John J.	VIa	" "
Murray, John T.	IVa	" "
Murray, Walter S.	IIIb	" "
Murray, William P.	IVa	" "
Neel, Andrew, Jr.	IVb	Lawrence, "
Neilson, Alexander S.	IIb	Lowell, "
Nelson, Edmund N.	IIIb	" "
Nelson, James A.	Va	" "
Newell, Henry J.	IVa	" "
Nichol, Samuel J.	IVc	" "
Nicoll, John P.	VIb	Andover, "
Nitschke, Charles E.	IIIa	Lawrence, "
Nixon, Herman L.	IIIa	Lowell, "

Name	Course	Address
Noring, Ernest G.	VII	Lawrence, Mass.
O'Brien, James F.	VIa	Lowell, "
O'Brien, Raymond L.	IVb	Lawrence, "
O'Connell, Walter J.	IVa	Andover, "
O'Connor, Gerald P.	IVa	Lowell, "
O'Connor, William F.	VIa	" "
Ogden, John T.	Ia-IIIa	Brookline, "
O'Hagan, Christopher	VIId	Lowell, "
O'Hare, Charles J.	VIa	Andover, "
O'Hearn, Patrick J.	VIa	Lowell, "
O'Keefe, Leonard C.	VIa	" "
Olson, Gustaf	Ia	" "
Ortel, Charles	VIId	" "
Palm, Henry W.	VIe	" "
Palm, Herbert E.	Ia	" "
Paquette, Eugene N.	VIb	" "
Paquin, Emile	VIId	" "
Paradis, Eugene	VIa	Lawrence, "
Parkhurst, Curtis M.	IIIa	Lowell, "
Parkhurst, George E.	IVa	Lawrence, "
Parsons, Leon R.	VIa	" "
Pascall, Herbert G.	VIb	Lowell, "
Patterson, Alfred H.	IIb	Lawrence, "
Patterson, Frank N.	IIb	" "
Paul, Frank M.	Ia	Lowell, "
Pearson, Mortimer	VIa	" "
Pellistri, Peter H.	VIId	" "
Perrault, Lawrence	VIa	North Billerica, "
Perry, John	VIa	Lowell, "
Perry, Richard J.	VIa	" "
Perry, William J.	IIIb	" "
Phair, Raymond H.	VIa	Lawrence, "
Pica, Albert H.	VIa	" "
Picard, Marie L. C.	IIIb	Lowell, "
Pickles, Arthur	IIb	Lawrence, "
Pickles, Herbert	IIb	Methuen, "
Pihl, Mansfred M.	VIId	Lowell, "
Place, Christopher	VIa	" "
Plante, Noe	Ib	" "
Playdon, Louis C.	IIIa	" "
Pomerleau, Abraham J.	IVa	" "
Poore, Herbert E.	IVb	Lawrence, "
Porter, William E.	Ia	Lowell, "
Preble, George A.	IVb	" "
Priestley, Harry	IIb	Lawrence, "
Prisley, Frederic A.	IVa	" "
Proctor, James W.	Va	Lowell, "
Profe, Henry C.	IVa	" "
Provencher, Daniel	VIId	" "
Quinn, Frank J.	VIa	" "
Quinn, Frank J.	VIa	" "
Quinn, Henry G.	VIb	Chelmsford, "
Quinn, Joseph	IIIb	Lowell, "
Quinn, Joseph M.	VIa	" "
Ramus, Manuel S.	VIa	" "
Ready, Martin J.	VIa	" "
Reilly, Francis E.	VIa	" "

Name	Course	Address
Reilly, William B.	IVa	Lowell, Mass.
Renfrew, Norman J.	Vib	Lawrence, "
Richard, Calvin J.	IIIa	" "
Richards, Arnold I.	IIIb	Lowell, "
Richards, Yvette J.	IVa	" "
Richburg, Clyde W.	Vib	" "
Ripley, George K.	Ia-IIb	" "
Ritchie, Charles L.	VIe	North Billerica, "
Robb, Alvin S.	Vib	Lawrence, "
Roberts, John P.	IIa	Medford, "
Roberts, Joseph	IIIa	Lawrence, "
Robertshaw, Gilbert H.	VIa	Lowell, "
Robinson, Charles P.	Vib	Lawrence, "
Rodgers, Stanley B.	VIa	Lowell, "
Rolfe, Charles E.	IIIa	" "
Rolfe, Fred G.	VIa	" "
Rostron, John	VIa	" "
Rostron, Robert	Va	" "
Rother, Robert	VId	Methuen, "
Rowe, George A.	VIa	Lowell, "
Russell, Charles	VIa	" "
Russell, John W.	Vib	Lawrence, "
Rutledge, Robert J.	Ia-IIIa	Lowell, "
Ryan, John H.	VId	" "
Ryan, Michael	VId	" "
St. Arnaud, Armand	Ib	" "
St. Arnaud, Joseph E.	Ib	" "
St. George, Charles E.	VIa	" "
Sanborn, Elmer E.	VIe	" "
Sandner, Charles A.	Iib	Lawrence, "
Santos, Joseph C., Jr.	VIa	Lowell, "
Santos, William S.	VIa	Methuen, "
Saunders, Louis P.	Vb	North Andover, "
Saxon, Thomas	VIa	Lowell, "
Scharmann, Richard A.	Ia-IIIa	Lawrence, "
Schmidt, Walter G.	IVa	Lowell, "
Scott, Henry W.	VId	" "
Scott, John W.	IIa	Ballardvale, "
Scully, Patrick F.	Vb	Lowell, "
Severson, Segur D.	Vib	" "
Shanley, Edward	Iib	" "
Shaw, William	Ia	" "
Shearer, William A.	IIIa	Lawrence, "
Sibley, Clifford C.	Vib	Lowell, "
Silk, Gerald T.	VIa	" "
Silk, Percy B. S.	VIe	" "
Simon, George	VId	Lawrence, "
Sjostrom, Carl G. V., Jr.	Ia	Lowell, "
Slater, Arthur C.	IVa	North Andover, "
Slater, Hartley	Iib	Methuen, "
Smart, George A.	Vc	Lowell, "
Smith, Gordon N.	IVc	Methuen, "
Smith, Miles H.	Vb	Lawrence, "
Sparks, Albert	IVa	Lowell, "
Spencer, Robert E.	Vib	North Billerica, "
Sproat, Herbert V.	Ia	Lowell, "
Stanton, Raymond F.	Vib	" "

Name	Course	Address
Stevens, Samuel D., Jr.	IVa	Lowell, Mass.
Stewart, George	VIe	" "
Stewart, Warren D.	IVc	" "
Stowell, Joseph C.	Ia-IIIa	" "
Sugden, Albert G.	VIId	" "
Sullivan, Cornelius J.	VIa	" "
Sullivan, Michael	VIa	" "
Swacek, Alois	VIa	" "
Sweatt, Leroy N.	VIa	" "
Sweatt, Sadie M.	IIIa	" "
Taft, Edson S.	VIb	" "
Taft, Paul G.	VIa	" "
Talbot, Joseph	IVa	Methuen, "
Tansey, Joseph A.	VIb-VIe	Lowell, "
Taylor, Adie	Va	" "
Taylor, Cleon A.	VIb	" "
Taylor, Everett E.	VIa	" "
Taylor, Frank	Ia	" "
Taylor, Fred H.	Va	" "
Tellier, Mary B. A.	IIIb	" "
Thibodeau, Rodrigue	IIIb	" "
Thomas, Fred N.	IIb	Methuen, "
Thompson, Ethel B.	IIIb	Lowell, "
Thomson, Donald T.	Ia	" "
Thornhill, Charles A.	IVa	Lawrence, "
Thornton, James D.	IVc	" "
Tierney, Urban L.	VIe	Lowell, "
Todd, Walter E.	IIa-VII	" "
Torpey, Henry K.	IVc	" "
Traynor, Harold M.	VIa	Lawrence, "
Treat, Fred H., Jr.	Ia-Va	Somerville, "
Trevors, Harold R.	IIIb	Lowell, "
Trowbridge, Frank J.	VIb	" "
Trudeau, Ernest	VIa	" "
Trudeau, Fred E.	VIa	" "
Tucke, Parker	Ia-IIIa	" "
Turgeon, Roderick	IVc	" "
Turner, Ralph W.	IVa	Methuen, "
Underwood, George T.	VIa	Lowell, "
Upton, George H.	IVc	" "
Vancour, Herbert J.	VIId	" "
Veiga, Dominick E.	VIa	" "
Vian, Armand	IIIb	" "
Vogler, Fred	VIId	Methuen, "
Voisard, Raoul J.	IVa	Lowell, "
Waddilove, Monro	VIId	" "
Walker, John J.	VIa	Lawrence, "
Walker, Joseph F.	IIb	Methuen, "
Walsh, James V.	VIa	Lawrence, "
Walsh, John S.	Ia	Lowell, "
Walsh, Mary J.	IIIb	" "
Ward, Charles	VIb	Lawrence, "
Webster, Fred E.	Ia	Lowell, "
Welch, Claude E.	VIId	" "
Welcome, Harold A.	VIe	" "
Welsh, Thomas H.	VIa	" "
Wentworth, Reginald A.	Ia	" "



Name	Course	Address
West, Richard E.	IVa	Lowell, Mass.
Whalley, George	VIa	" "
Wheeler, Arthur J.	IIIa	Lawrence, "
Wheeler, Carl L.	VIa	Lowell, "
Wheeler, Harry J.	IIIb	" "
Wholey, Michael	VIa	" "
Widdop, Roland R.	VIb	Lawrence, "
Wilde, Herman E.	IVb	" "
Wilde, Linwood T.	VIa	Lowell, "
Wilde, Raymond T.	IIb	" "
Willey, Erwin J.	VIa-VIe	" "
Wilson, James	Va	Lawrence, "
Winn, Charles L.	VIe	Lowell, "
Woodhead, Horatio H.	IIb	Lawrence, "
Worsman, Walter	IIb	" "
Wright, Leonard	VIa	Lowell, "
Yang, Sih-zung	IIb	" "
Zimmer, George D.	IVc	" "

### SUMMARY

Day Students .....	160
Evening Students .....	833
Total .....	993
Names counted twice .....	59
Net Total .....	934

# ALPHABETICAL LIST OF GRADUATES

Name	Course	Class	Day or Evening
Abbott, Edward G.	Vb	1913	E
Abbott, Edward M.	II	1904	D
Abbott, George R.	II	1908	D
Abbott, Paul W.	Ia	1906	E
Ackroyd, Theodore C.	IIb	1907	E
Adams, Henry S.	IIa	1903	E
Adams, Henry S.	I	1905	D
Adams, Michael E.	VI	1904	E
Adams, Tracy A.	IV	1911	D
Adams, William R.	IIa	1902	E
Allen, William J.	IVa	1913	E
Alter, Frederick A.	IVa	1914	E
Amiot, Louis H.	Va	1906	E
Anderson, Carl A.	IV	1909	E
Anderton, Harry	Va	1910	E
Anderton, Harry	Vb	1913	E
Andrews, Oliver	Ia-Va	1911	E
Arienti, Peter J.	IV	1910	D
Armitage, Ernest	Vb	1915	E
Armstrong, Elias B.	IIb	1906	E
Arnold, Warren H.	VII	1908	E
Arnold, Warren H.	IIIa	1909	E
Arundale, Henry B.	II-III-V	1905	D
Arundale, Henry B.	II	1907	D
Aspinwall, William	IIb	1901	E
Atkinson, Henry	IIIa	1915	E
Atkinson, Norman	Vb	1910	E
Atkinson, Reginald C.	IVa	1913	E
*Avery, Charles H.	II	1906	D
Bailey, Carl E.	Ia	1910	E
Bailey, Joseph W.	I	1899	D
Bailey, Rothwell	Va	1909	E
Bailey, Walter J.	IV	1911	D
Bain, William A.	VII	1907	E
Bake, Herbert	IIIa	1905	E
Bake, Herbert	P. G. IIIa	1906	E
Bake, Herbert	VII	1907	E
Bake, Herbert	P. G. IIIa	1909	E
Bakewell, Albert	Vb	1914	E
Baldwin, Arthur L.	IV	1900	D
Baldwin, Frederick A.	II	1904	D
Ballard, Horace W. C. S.	IV	1908	D
Ballinger, Frederick W.	IIb	1907	E
Ballinger, Raymond F.	VIIb	1915	E
Ballinger, William E.	IIb	1911	E
Balmforth, James H.	IIa	1903	E
Balmforth, James H.	IIa-b	1904	E
Balmforth, William F.	VI	1904	E
Balmforth, Martha (See French, Mrs.)			
Banks, Jonas	Va	1909	E
Banks, Jonas	Vc	1910	E
Barber, James E.	IIb	1907	E
Barker, John P.	V	1904	E

\*Deceased

Name	Course	Class	Day or Evening
Barlow, Robert	V	1902	E
Barnes, Hammond	Ia - Va	1914	E
Barnes, Joseph	Ia	1911	E
Barr, Mrs. John E.	IIIb	1909	E
(Butler, Elizabeth M.)			
Barr, I. Walwin	I	1900	D
Barraclough, John C.	Ia	1907	E
Barrington, James L.	IV	1908	E
Barrington, John A.	IV	1904	E
Barrows, Ariston K.	Va	1915	E
Barry, Edward J.	IIIa	1903	E
Bassett, Cyrus J.	Vb	1913	E
Bastow, Henry	IIIa	1903	E
Bastow, Henry	V	1905	E
Bastow, Percy	IVa	1911	E
Bastow, Stephen W.	IV	1907	E
Baxter, Alvah J.	IIa	1903	E
Bayard, Pierre P.	IIIa	1907	E
Beaulieu, William E.	IIb	1913	E
Beech, Wilfred	Ia	1912	E
Begen, Thomas W.	IIb	1907	E
Begen, Thomas W.	IIb	1908	E
Bell, Charles W.	VIa	1913	E
Bell, Frederick W.	IIa	1905	E
Bennett, Edward H.	V	1903	D
Bennett, Herbert B.	II	1913	D
Benoit, Benjamin L.	VIb	1909	E
Benoit, William A.	Va	1907	E
Bernard, Joseph E.	VIa	1912	E
Berry, Alfred H.	VI	1908	E
*Berry, Frank M.	IIIa	1899	E
*Berry, Frank M.	V	1901	E
Berry, Percy W.	Vb	1910	E
Bigelow, Prescott F.	II	1912	D
Binns, Heaton	II-V	1899	E
Binns, Heaton	VI	1902	E
Birdsall, James E.	IIb	1915	E
Birkby, Charles H.	IVa	1911	E
Bixby, Edward E.	IIIa	1914	E
Black, Alexander S.	Vb	1913	E
Blaikie, Howard M.	II	1911	D
Blais, Emile	VIa	1912	E
Blake, Parker G.	VI	1914	D
Blanchette, Eugene	IIIb	1912	E
Bloom, Wilfred N.	IV	1903	D
Bodwell, Henry A.	II	1900	D
Boije, Walter F.	IIb-VII	1912	E
Bonney, Nathaniel H.	IVa	1915	E
Booth, Arthur	IIIa	1909	E
Bordeleau, Georges A.	IIIb	1915	E
Boucher, John L.	VI	1904	E
Bouille, Arthur L.	Vb	1907	E
Bourchard, Ethan J.	Vc	1910	E
Bourchard, Robert R.	Vb	1910	E
Bowen, Herbert E.	IIIa	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Bowie, Samuel A.	VI	1905	E
Bowring, George P. B.	VI	1902	E
Boyd, George A.	I	1905	D
Boyle, John E.	Va	1914	E
Bradford, Roy H.	II	1906	D
Bradley, Raymond F.	VI	1914	D
Bradley, Richard H.	V	1901	D
Brainerd, Albert C.	Ia	1912	E
Brainerd, Arthur T.	IV	1909	D
Brainerd, Harry C.	Ia	1912	E
*Brainerd, Irving L.	Ia	1902	E
Bramley, Charles	Va	1912	E
Branch, Guy E.	IIb	1915	E
Brandy, William F.	IVa	1914	E
Brandy, William F.	IIa	1915	E
Brannen, Leon V.	III-V	1907	D
Brannen, Leon V.	IIa	1907	E
Breen, James D.	Vc	1913	E
Breen, John P.	Vb	1913	E
Brickett, Chauncey J.	II	1900	D
Brickett, Raymond C.	II	1914	D
Broadbent, James H.	Vb	1908	E
Broadbent, James T.	Ia	1899	E
Broadbent, William	Vb	1908	E
Broderick, Thomas H.	VII	1912	E
Brooks, Noah	IIIa-V	1901	E
Brouder, John J.	IIIa	1906	E
Brouder, John J.	VII	1907	E
Brown, James H.	VIa	1914	E
Brown, James P.	IIIa	1905	E
Brown, James P.	P. G. IIIa	1906	E
Brown, James T.	IIIa	1908	E
Brown, Leon E.	VIa	1914	E
Brown, Rollins G.	IV	1912	D
Brown, William F.	VIb	1911	E
Brown, William G.	IIb	1906	E
Browne, Charles D.	Ia	1912	E
Bryant, Ernest L.	VI	1905	E
Buchan, Donald C.	II	1901	D
Buckley, Harry	IV	1908	E
Buckley, Richard A.	Vb	1909	E
Bucklitsch, Gustave J.	IIb	1907	E
Bunce, Raymond H.	Vb	1909	E
Burgess, Joseph H.	Va	1906	E
Burgess, Joseph H.	Vb	1907	E
Burgess, Joseph H.	IIIa	1910	E
Burghardt, Edward S.	IIa	1902	E
Burghardt, Paul C.	IIa	1901	E
Burke, George J.	VII	1912	E
Burke, James F.	Vc	1911	E
Burke, Thomas F.	Ia	1905	E
Burnham, Frank E.	IV	1902	D
Burnham, Joseph W.	IIIa	1906	E
Burnham, Wilmont V.	Vb	1906	E
Burns, Edward J.	IV	1905	E

\*Deceased

Name	Course	Class	Day or Evening
Burns, James E.	IV	1905	E
Burns, Richard L.	VIb	1914	E
*Burrage, Katherine C.	IIIb	1899	D
*Burrage, Katherine C.	P. G. IIIb	1900	D
Butland, Ralph A.	VII	1913	E
Butland, Ralph A.	IIb	1915	E
Butler, Benjamin O.	VI	1904	E
Butler, Elizabeth M. (See Barr, Mrs. John E.)			
Butterworth, Charles A.	Va	1907	E
Butterworth, John A.	IIb	1907	E
Buzzell, Fred S.	IIIa	1912	E
Buzzell, Fred S.	VII	1913	E
Buzzell, William O.	IIIa	1901	E
Buzzell, William O.	P. G. IIIa	1902	E
Byam, Walter S.	VI	1903	E
Cady, Dennis J.	V	1903	E
Caldwell, James	VIa	1915	E
Callahan, Patrick A.	VI	1904	E
Cameron, Elliott F.	IV	1911	D
Campbell, Albert D.	IIb	1900	E
Campbell, Archibald	IV	1908	E
Campbell, Charles F. P.	IIIb	1915	E
Campbell, Edward G.	VIc	1910	E
*Campbell, Laura E.	IIIb	1900	D
Campbell, Louise P.	IIIb	1903	D
Campbell, Orison S.	II	1903	D
Campling, Frank	IIb	1914	E
*Carden, Francis E.	IIb	1907	E
*Carden, Francis E.	IIb	1908	E
Carlson, Ernest B.	IIb	1907	E
Carlson, Goddard O.	VII	1912	E
Carman, William	Va	1909	E
Carney, William J.	Ia	1908	E
Caron, Cleophas	Ia	1905	E
Carpilio, John A.	VIa	1911	E
Carr, George E.	I	1905	D
Carter, Charles R.	Vb	1908	E
Carter, Robert A.	IV	1902	D
Carty, Thomas P.	Vb	1911	E
Cary, Julian C.	VI	1910	D
Casavant, Elphege H.	VIa	1915	E
Cawthra, Albert B.	IIb	1900	E
Chadwick, Laurie	Vb	1915	E
Chamberlin, Frederick E.	I	1903	D
Chandler, Proctor R.	IV	1911	D
Charleton, Peter	VIa	1913	E
Cheetham, John James	IIIa	1901	E
Cheetham, John James	P. G. IIIa	1902	E
Cheetham, John Joseph	Ia	1904	E
Chesworth, Frank K.	Va	1909	E
Chippindale, Ernest W.	IIb	1901	E
Chisholm, Lester B.	I	1911	D
Christenson, John O.	VIb	1912	E
Christison, Hugh	IV	1910	E
Christison, Hugh	IVd	1911	.

\*Deceased



Name	Course	Class	Day or Evening
Church, Charles R.	II-V	1906	D
Churchill, Charles W.	III	1906	D
Clapp, F. Austin	II	1904	D
Clark, John H.	IVa	1914	E
Clark, John W.	IVa	1912	E
Clark, Thomas T.	II	1910	D
Clarke, Wesley J.	VIId	1913	E
Classon, Walter H.	Vc	1913	E
Cleary, Charles J.	II	1913	D
Clogston, Raymond B.	IV	1904	D
Coan, Charles B.	IV	1912	D
Cochrane, John	VIb	1911	E
Cochrane, John	IVa	1915	E
Cochrane, William D.	IVa	1914	E
Cockell, Frederick H.	IIIa	1909	E
Colby, Arthur D.	Ia	1900	E
Cole, Edward E.	IV	1906	D
Cole, James T.	II	1905	D
Collier, John	IIIa	1899	E
Collier, John	P. G. IIIa	1902	E
Collins, Frank	VIa	1914	E
Collins, John A.	IIa-b	1905	E
Coman, James G.	I	1907	D
Conant, Harold W.	I	1909	D
Conant, Richard G.	I	1912	D
Conklin, Jennie G.	IIIb	1905	D
Conley, Frederick A.	VI	1904	E
Connors, Edward F.	VI	1904	E
Cook, Cheney E.	IIIa	1905	E
Cook, Kenneth B.	I	1913	D
Cooper, George H.	Ia	1914	E
Corr, Eben W.	Vb	1908	E
Corr, James F.	Vb	1908	E
Cosendai, Edwin F. E.	IV	1915	D
Cote, Fred J.	VIa	1913	E
Cote, George W.	VIb	1911	E
Cowdell, Herbert	V	1901	E
Cowdrey, Charles E.	V	1902	E
Cowdrey, Charles E.	Vb	1909	E
Cox, Edward J.	IIIa	1910	E
Cox, Edward J.	Va	1911	E
Cox, Edward J.	Ia	1913	E
Cox, Edward J.	Ia	1914	E
Cox, Edward J.	Vc	1915	E
Craig, Albert W.	IV	1907	D
Craig, Clarence E.	III	1902	D
Craven, Harry	VII	1908	E
Creese, Guy T.	IV	1914	D
Cremin, Daniel J.	Ia	1902	E
Crompton, Henry H.	II	1899	E
Cudmore, Edward T.	VIId	1913	E
Culver, Ralph F.	IV	1904	D
Curran, Charles E.	II-III-V	1902	D
Currier, Herbert A.	I	1906	D
Currier, John A.	II	1901	D
Curtis, Frank M.	I	1906	D
Curtis, William L.	II	1905	D

Name	Course	Class	Day or Evening
Cushing, Lester H.	Ia	1913	E
Custer, James J. E.	V	1905	E
Cutler, Benjamin W., Jr.	III	1904	D
Cutress, Albert J.	VId	1910	E
Cuttle, James H.	II	1899	D
Dalton, Gregory S.	IV	1912	D
Dana, Clarence A.	VI	1905	E
Daskalakis, Efthimios Z.	Vb	1912	E
Daskalakis, Efthimios Z.	Vc	1913	E
Davieau, Arthur N.	VI	1913	D
Davis, Alexander D.	VI	1913	D
Davis, Alexander D.	VI	1914	D
*Davis, Henry	IIb	1901	E
Davis, Prentice T.	Ia	1904	E
Davison, Frank L.	Vb	1909	E
Dean, Hubert R.	VIIb	1911	E
Dearborn, Roy	VI	1913	D
Deearth, Elmer E.	IV	1912	D
Deely, John A.	Vb	1910	E
Delaney, Michael J.	Vb	1911	E
Delderfield, John W.	VId	1914	E
Delmage, Edward R.	IIIa	1904	E
Dempsey, John W.	IIa	1904	E
Devine, Mary F.	IVa	1913	E
Dewey, James F.	II	1904	D
Dewey, Maurice W.	II	1911	D
Dick, Henry K.	Ia	1912	E
Dick, Hugo P.	IIIa	1905	E
Dick, Hugo P.	P. G. IIIa	1906	E
Dick, Hugo P.	IIb	1907	E
Dick, Hugo P.	Vb	1908	E
Dickson, Andrew	IIa	1906	E
Dillon, James H.	III	1905	D
*Dimlick, Benjamin C.	IIIa	1905	E
*Dimlick, Benjamin C.	P. G. IIIa	1906	E
Dittman, Ralph A.	IIIa	1912	E
Dixon, Arthur	IIIa	1908	E
Dobbs, William	IIb	1907	E
Dobbs, William	IIb	1908	E
Dodge, Charles P.	IIa	1907	E
Dodge, Ernest W.	Vb	1911	E
Dodge, Frank	Ia	1906	E
Dollbaum, John A.	IIIa	1912	E
Donahay, William H.	Vb	1912	E
Donahue, Michael F.	VI	1904	E
Donahue, William E.	VIIb	1914	E
Donald, Albert E.	II	1904	D
Donnellan, Frank T.	IIa	1902	E
Donnellan, Frank T.	V	1903	E
*Donnelly, James	Ia	1900	E
Donovan, Daniel F.	IIa	1901	E
Doole, George L.	VI	1904	E
Dooley, Edward W.	VI	1904	E
Dorr, Clinton L.	VI	1914	D
Dowd, Martin F.	IIIa	1914	E

\*Deceased

Name	Course	Class	Day or Evening
Downs, John F.	VId	1911	E
Doyle, John B.	VId	1913	E
Dubois, Ubald E.	VId	1915	E
Duce, Benjamin	IIIa	1906	E
Duce, Benjamin	VII	1907	E
Duckett, Fred I.	Vb	1910	E
Dudley, George E.	Ia	1902	E
Duggan, Francis P.	VI	1904	E
Dulligan, Charles E.	VIa	1909	E
Dulligan, Charles E.	IVa	1912	E
Dulligan, Lawrence F.	VIa	1910	E
Dulligan, Thomas	VIa	1911	E
Dunn, George C.	IIIa	1908	E
Dunn, George C.	IVa	1910	E
Dunn, George C.	IVb	1913	E
Dunning, Carlos W.	VId	1909	E
Duval, Joseph E.	II	1910	D
Dwight, John F., Jr.	II	1908	D
Early, William E.	VId	1915	E
Egan, Charles H.	IVa	1912	E
Egan, John W.	VId-VId	1915	E
Ehrenfried, Jacob B.	II-V	1907	D
Eichhorn, Paul A.	VIa	1915	E
Ekengren, Hilding C.	IIIb	1913	E
Eklund, Louis V.	Vb	1910	E
Elliot, Gordon B.	II	1912	D
Ellis, George W.	VII	1906	E
Elston, Fred R.	IIIa	1900	E
Emerson, Frank W.	II	1903	D
Emmons, Harry I.	IVa	1914	E
Engstrom, Karl E.	VI	1912	D
Erbe, Gustave	VI	1905	E
Evans, Alfred W.	III	1903	D
Evans, William R.	III	1903	D
Evison, William A.	V	1901	E
Ewer, Nathaniel T.	IV	1901	D
Eyers, John T.	IV	1906	E
Fairbanks, Almonte H.	II	1909	D
Faneuf, George J.	VId	1915	E
Farmer, Chester J.	IV	1907	D
Farr, Leonard S.	II	1908	D
Farrell, Thomas	IIa	1901	E
Fels, August B.	II	1899	D
Ferguson, Arthur F.	I	1902	D
Ferguson, Arthur F.	I	1903	D
Ferguson, Thomas	V	1902	E
Ferguson, William G.	III	1909	D
Fernley, Bert D.	VId-VId	1915	E
Field, Charles W.	VI	1902	E
Fielding, Fred	Vc	1910	E
Finlay, Harry F.	IV	1910	D
Fisher, Russell T.	VI	1914	D
Fiske, Starr H.	II	1909	D
Flaherty, William	Vb	1911	E
Fleming, Frank E.	IV	1906	D
Flemings, Lester A.	Va	1910	E
Flemings, Lester A.	Ia	1915	E

Name	Course	Class	Day or Evening
Fletcher, Roland H.	VI	1910	D
Flint, Leon G.	IIIa	1907	E
Flynn, John	VI	1910	E
Flynn, John J.	VI	1903	E
*Flynn, Patrick	Vb	1910	E
Flynn, Thomas P.	IV	1911	D
Flynn, William J.	Vb	1908	E
Ford, Edgar R.	IV	1911	D
Ford, Joseph L.	IIIa	1915	E
Forrest, Fred G.	IIa	1902	E
Forrest, William R.	VI	1913	E
Fortune, David A.	IIb	1902	E
Foster, Clifford E.	II	1901	D
Foster, Sherwood L.	Ia	1905	E
Fournier, Albert A.	Ia	1911	E
Frame, William	V	1901	E
Frank, Emil M.	IIIa	1904	E
Frank, Emil M.	P. G. IIIa	1906	E
Frechette, Alphonse J.	IIb	1907	E
Freeman, George D.	VI	1913	E
Freeman, Ralph W.	IVa	1912	E
Freeman, Ralph W.	IVb	1914	E
French, Ernest J.	Ia	1905	E
French, George W., Jr.	IIIa	1915	E
French, Mrs. (Balmforth, Martha)	IIIa	1903	E
Frost, Harold B.	II	1912	D
Frothingham, Newton S.	Ia	1912	E
*Fujiyoshi, Heisayu	Ia	1910	E
*Fujiyoshi, Heisayu	Va	1911	E
Fuller, Edwin M.	Ia	1915	E
Fuller, George	I	1903	D
Fulton, John McC.	V	1906	E
Gadsby, Arthur N.	II	1913	D
Gagan, John H.	V	1901	E
Gagnon, Arthur C.	VI	1915	E
Gahn, George L.	II	1906	D
Gainey, Francis W.	IV	1911	D
Gakidis, Alexander N.	IVa	1911	E
Gale, Harry L.	III	1910	D
Garner, William	IIIa	1903	E
Garrity, Joseph F.	VI	1911	E
Garrity, Peter F.	Va	1915	E
Gaspar, Edith E.	IIIb	1910	E
Gaunt, Alfred C.	IIIa	1899	E
Gaunt, Alfred C.	P. G. IIIa	1902	E
Gaunt, Alfred C.	IIa	1903	E
Gaunt, Alfred C.	IIb	1904	E
Gaunt, Ernest H.	IIIa	1909	E
Gauthier, William	Vb	1910	E
Gay, Earle B.	Ia	1905	E
Gay, Olin D.	II	1908	D
Geaney, James H.	VII	1915	E
Gearin, John W.	VIIb	1915	E
Gerrish, Walter	III	1903	D
Gerry, Churchill	VIa	1915	E
Gibbons, James J.	VIa	1914	E
Giffin, Charles H.	IIIa	1913	E

\*Deceased

Name	Course	Class	Day or Evening
Giffin, Charles H.	VII	1914	E
Giffin, George R.	IIIa	1913	E
Giffin, George R.	VII	1914	E
Gile, Harold E.	IVa	1913	E
Gilinson, Philip J.	VIa	1909	E
Gill, Gardner G.	IVa	1914	E
Gillispie, James E.	VII	1907	E
Gillon, Sarah A.	IIIb	1906	D
Gilman, Edward T.	VIa	1914	E
Glennon, Edward M.	IVa	1911	E
Goddard, Harold W.	VIb	1915	E
Goddard, Walter L.	VII	1915	E
Goldberg, George	VI	1910	D
Good, Henry	Ia	1902	E
Goodchild, George	Ia	1903	E
Goodchild, George	VI	1905	E
Goodhue, Amy H. (See Harrison, Mrs.)			
Goodwin, Ross	Vb	1911	E
Gookin, Alice L. (See Murphy, Mrs.)			
Gordon, Herbert E.	IIIa	1909	E
Gordon, Loyd H.	VIa	1913	E
Grant, Archibald	I Ib	1901	E
Graves, John F.	VIb	1912	E
Gray, Finley M.	VI	1903	E
Greenhalge, James	Vc	1908	E
Greenwood, Ralph F.	VII	1912	E
Gregson, Robert B.	Va	1906	E
Gregson, Robert B.	Ia-Vc	1907	E
Grouke, Michael	I Ib	1901	E
Gustafson, Alfred L.	IVa	1911	E
Gustafson, Alfred L.	VIa	1915	E
Gyzander, Arne K.	IV	1909	D
Haartz, John C.	VII	1907	E
Haas, Ignatius	Ia	1907	E
Hadley, Walter E.	IV	1908	D
Haigh, Walter	IIIa	1902	E
Haigh, William	Vb	1906	E
Haithwaite, Albert	Ia	1914	E
Haldane, Andrew	Va	1914	E
Hale, Frank O.	Ia	1915	E
Hall, Richard G.	Ia	1915	E
Hall, Sydney H.	V Ib	1914	E
Hallbauer, William R.	Vb	1908	E
Halloran, Joseph M.	IVa	1915	E
Halsell, Elam R.	I-V	1904	D
Hamblett, Harry A.	Ia	1907	E
Hammond, John N.	Vb	1914	E
Handley, John M.	Vb	1911	E
Hanglin, Albert J.	IV	1907	E
Hanglin, William E.	Vb	1907	E
Hanley, Edward T.	I Ib	1915	E
Hannagan, Edward F.	I Ib	1913	E
Hannagan, Edward F.	VII	1914	E
Hansen, Hans M.	VI d	1912	E
Hanslip, Charles W.	Vb	1911	E
Hanson, Edward	IIIa	1908	E
Hanson, Edward	P. G. IIIa	1909	E
Hanson, Edward	Ia	1913	E



Name	Course	Class	Day or Evening
Hanson, Winfield S.	IVa	1914	E
Harder, Elmer E.	VI	1905	E
Hardman, David B.	IV	1908	E
Hardy, Philip L.	VI	1910	D
Harmon, Charles F.	I	1899	D
Harrington, Thomas	IV	1915	D
Harris, Charles E.	I	1905	D
Harris, George S.	I	1902	D
Harris, Louis	VII	1908	E
Harrison, Mrs. (Goodhue, Amy)	IIIb	1900	D
Harrison, Mrs. (Goodhue, Amy) P.G.	IIIb	1901	D
Hartshorn, George T.	VII	1912	E
Hartwell, Henry E.	VI	1906	E
Hartwell, Marcus H.	Ia-Va	1911	E
Hartwig, Albert E.	Vb	1914	E
Hashmatian, Harry	IIIb	1915	E
Haskell, Spencer H.	II	1907	D
Haskell, Walter F.	IV	1902	D
Hassett, Paul J.	IV	1912	D
Hathorn, George W.	IV	1907	D
Haven, George W.	IIIa	1905	E
Haworth, Joseph	VI	1902	E
Hay, Ernest C.	II	1911	D
Hayes, Michael C.	IIa	1909	E
Healy, Andrew J.	VId	1915	E
*Heaton, Forster G.	IV	1911	E
Hebert, Charles L. J.	IV	1907	E
Hempel, Frank	V	1904	E
Henderson, George R.	IVa	1915	E
Hendrickson, Walter A.	II	1911	D
Hennessey, Ambrose M.	VII	1908	E
Hennigan, Arthur J.	II	1906	D
Henzie, John J.	IIIa	1914	E
Herbst, Gustav F.	Va	1914	E
Hering, Paul C.	IIIa	1910	E
Herrick, William E.	VII	1911	E
Herron, Alexander T.	Ia	1913	E
Herron, Alexander T.	IVa	1914	E
Hibbert, George E.	Va	1910	E
Hibbert, George E.	Vc	1911	E
Hibbert, George E.	Vb	1912	E
Higginbottom, Harold J.	IVa	1915	E
Higgins, Alfred	IIIa	1913	E
Higgins, James A.	IIa	1903	E
Higgins, James A.	IIa-b	1904	E
Higginson, Joseph H.	IIIa	1912	E
Hildreth, Harold W.	II-V	1906	D
Hildreth, Harold W.	II	1907	D
Hill, Bruce	IIIa	1914	E
Hill, Daniel	IIb	1901	E
Hill, Ellsworth O. C.	IIb	1910	E
Hill, Harold	Ia	1908	E
Hill, Harold	Va	1909	E
Hill, Paul	VII	1914	E
Hilliard, William B.	VIa	1910	E
Hillier, Arthur P.	IIb	1909	E
Hintze, Thomas F.	I	1906	D

\*Deceased

Name	Course	Class	Day or Evening
Hird, Arthur W.	Ia	1910	E
Hird, James A.	IVa	1910	E
Hitchcock, Thomas B.	Ia-IIa-IIIa	1901	E
Hitchen, Harry S.	Vb	1907	E
Hitchen, Thomas G.	Vb	1907	E
Hodge, William	VIa	1911	E
Hodgkins, Albert A.	VII	1909	E
Hodgkins, Albert A.	IIIa	1910	E
Hoellrich, Martin J.	Vb	1908	E
Hoellrich, Martin J.	Vc	1910	E
Hoelzel, Louis C.	VIa	1913	E
Hoessler, Carl, Jr.	IIIa	1906	E
Hogan, James A.	V	1902	E
Holden, Francis C.	IV	1909	D
Holgate, Benjamin	III	1902	D
Holgate, Benjamin	V	1903	D
Holgate, Charles H.	IIa	1901	E
Holland, Walter F.	IIIa	1912	E
Hollings, James L.	I	1905	D
Holmes, Otis M.	VI	1912	D
Holmes, Otis M.	VI	1913	D
Holt, Gavin O.	IVa	1910	E
Holt, Harry C.	VIa	1909	E
Hood, Leslie N.	IV	1912	D
Hook, Russell W.	IV	1905	D
Horman, Charles P.	IIIa	1914	E
Horsfall, George G.	II-III-V	1904	D
Horton, Chester T.	VI	1913	D
Horton, Chester T.	VI	1914	D
Houston, William I.	IIIa	1909	E
Houston, William I.	Vb	1910	E
Howard, John	V	1900	E
Howard, John	IIIa	1903	E
Howard, John	IIa	1906	E
Howard, John	VII	1907	E
Howard, Thomas	V	1905	E
Howe, Charles W., Jr.	VIa	1914	E
Howe, Woodbury K.	I	1910	D
Howell, Edward A.	Va	1909	E
Howker, John	Ia	1913	E
Howker, John	Va	1914	E
Hoyle, Edward	IIb	1902	E
Hoyle, Joseph	IIb	1904	E
Hoyt, Charles W. H.	IV	1907	D
Hubbard, Ralph K.	IV	1911	D
Huising, Geronimo H.	I	1908	D
Hunt, Chester L.	III	1905	D
Hunt, Herbert R.	VI	1905	E
Hunter, Ralph	IIIa	1901	E
Hunter, Ralph	V	1903	E
Hunton, John H.	VII	1910	E
Hunton, John H.	II	1911	D
Hunton, Lewis G.	IV	1905	E
Hurtado, Leopoldo, Jr.	Vc	1910	E
Hurtado, Leopoldo, Jr.	VI	1910	D
Huse, Charles H.	VIb	1914	E
Hutchings, James C.	VII	1912	E

Name	Course	Class	Day or Evening
Hutton, Clarence	V	1900	E
Hutton, Clarence	III	1903	D
Hutton, Harold	V	1906	E
Hutton, John M.	Vb	1906	E
Hutton, Thomas V.	Vb	1910	E
Ignatius, Pentti	Va	1907	E
Inberg, Magnus	Ia	1906	E
Ingham, Benjamin W.	Ia	1908	E
Innes, Andrew K.	Vb	1913	E
Jackson, Charles F.	VIb	1915	E
Jackson, Frank	VIb	1910	E
Jackson, Frank	VIc	1912	E
Jackson, Walter J.	IIa	1913	E
Jackson, Walter J.	Vb	1914	E
Jackson, Walter J.	IIIa-VII	1915	E
Jarvis, Charles	Vb	1913	E
Jasper, Grant	Vc	1912	E
Jean, Adhemard C.	VIa	1910	E
Jeanotte, Arthur	VI	1904	E
Jelleme, William O.	I	1910	D
*Jenckes, Leland A.	VI	1908	D
Jennings, James J.	IIIa	1903	E
Jepson, Harry	Vb	1907	E
Johnson, Arthur K.	IV	1913	D
Johnson, Arthur O.	IVa	1914	E
Johnson, Ernest A.	IIa-b	1902	E
Johnson, Ernest A.	V	1906	E
Johnson, Samuel L.	V	1903	E
Jones, Everett A.	III	1904	D
Jones, Everett A.	III	1905	D
Jones, Herbert	Ia	1913	E
Jones, William J.	IIb	1900	E
Jones, William J.	IIa	1901	E
Jordan, Frederic W.	IV	1910	E
Jorde, Linville T.	VIc	1910	E
Joyce, John	Vc	1909	E
Jury, Alfred E.	IV	1904	D
Kaler, Harold F.	VIb	1909	E
Kannheiser, William A.	Vb	1915	E
Kay, Harry P.	II	1909	D
Keleher, John J.	IIb	1903	E
Keleher, John L.	VIc	1915	E
Kellett, Irvine	II	1899	E
Kelley, Bernard J., Jr.	VIc	1909	E
Kelly, Michael H.	Ia	1902	E
Kelly, Michael H.	IIIa	1907	E
Kelly, Thomas F.	IVa	1915	E
Kennedy, William E.	VIa	1911	E
*Kent, Arthur	VIb	1912	E
*Kent, Arthur	VIc	1914	E
Kent, Clarence L.	III-V	1906	D
Kent, Ernest J.	IIb	1902	E
Kenworthy, Joseph	Ia	1905	E
Kenyon, Herbert	Ia	1915	E
Keough, Wesley L.	II	1910	D

\*Deceased

Name	Course	Class	Day or Evening
Kerrigan, Arthur J.	VIa	1912	E
Kershaw, Benn	Va	1909	E
Kershaw, Benn	Vc	1910	E
Kershaw, Samuel S.	IIb	1910	E
Kershaw, Samuel S.	Vb	1913	E
Kershaw, William E.	V	1904	E
Kidd, Thomas E.	IV	1906	E
Killerby, Walter	IIb	1901	E
Kimball, Irving D.	VI	1905	E
Kingsbury, Percy F.	IV	1901	D
Kirkpatrick, Lloyd A.	Ia	1913	E
Kirkpatrick, Lloyd A.	Ia	1914	E
Kirsch, Alfred O.	Vb	1907	E
Knowland, Daniel P.	IV	1907	D
Knowles, Frank E.	Ia	1903	E
Krause, George R.	VII	1910	E
Kyle, George S.	Ia	1915	E
Lachance, Melina	IIIb	1911	E
Laffert, August W.	IIIa	1906	E
Laffert, August W.	VII	1907	E
Lagerblad, Jarl	VII	1908	E
LaJeunesse, Joseph A.	IVa	1910	E
LaJeunesse, Joseph A.	IVc	1913	E
Lake, William F.	IIIa	1907	E
Lake, William F.	P. G. IIIa	1908	E
Lakeman, Fannie S.	IIIb	1900	D
Lamb, Arthur F.	II	1910	D
Lambert, Harry	IIb	1912	E
Lambert, Harry	Vb	1915	E
Lambert, Seth	IIb	1913	E
Lamont, Robert L.	II	1912	D
Lamont, Walter M.	IIb	1902	E
Lamson, George F.	I	1900	D
Lamson, George F.	VI	1905	E
Lane, John W.	I	1906	D
Lane, John W.	I-V	1907	D
Lane, Michael J.	VII	1915	E
Lang, William A.	Vc	1913	E
Langevin, Felix D.	VI	1904	E
Langevin, George F.	VIIb	1915	E
Lapierre, Alderic S.	IIIa	1912	E
LaPorte, Philip J.	IVa	1912	E
LaPrise, Frank E.	IVa	1914	E
Laughlin, James K.	III	1909	D
Laurin, Erick T. L.	VIIb	1914	E
Law, Alfred	IIb	1901	E
Lawliss, Augustine J.	V	1902	E
Lawrence, Charles	Ia	1903	E
Leach, John P.	I-V	1900	D
Leach, Joseph W.	V	1903	E
Learned, Frank E.	Va	1913	E
Learned, Frank E.	Vc	1914	E
Leather, Seward S.	IIb	1915	E
Leaver, Harold E.	IIb	1914	E
Leaver, Raymond J.	VIIb	1913	E
Leck, Arthur J.	VII	1910	E
Ledoux, Blanche H.	IIIb	1910	E

Name	Course	Class	Day or Evening
Lee, Charles	Ia	1902	E
Lee, William H.	V	1905	D
Lees, William H.	IIIa	1915	E
Leitch, Harold W.	IV	1912	D
Leitch, Harold W.	IV	1914	D
Leith, Edwin E.	IIIa	1902	E
Leith, Joseph E.	Vb	1912	E
Leith, Joseph E.	IIIa	1914	E
Leland, Raymond C.	VIIb	1915	E
Lemire, Arthur	Ia	1910	E
Lemire, Arthur	Va	1911	E
Leonard, Charles W.	VII	1913	E
Leonard, Charles W.	IVb	1915	E
Levi, Alfred S.	IV	1909	D
Lewis, Charles S.	VIIa	1914	E
Lewis, LeRoy C.	IV	1908	D
Lewis, Walter S.	IV	1905	D
Libby, C. Robert	VI	1902	E
Lightbown, William H.	Vb	1915	E
Lillis, Marvin H.	IV	1914	D
Linberg, Joseph F.	IVa	1911	E
Lincourt, Hector L.	VI	1903	E
Lincourt, Henry E.	VIIb	1909	E
Linehan, Thomas W.	VII	1914	E
Linkletter, Alfred C.	VI	1905	E
Lister, Henry	VII	1915	E
Lockberg, John L.	VId	1912	E
Logan, George H. S.	IV	1911	E
Logan, Robert F.	Va	1915	E
Looby, George A.	Vc	1914	E
Lord, Harry D.	IIIa	1904	E
Lord, Wilfred	IIIa	1901	E
Lord, Wilfred	IIb	1903	E
Lord, Wilfred	IIa	1904	E
Lovell, Charles E.	VI	1905	E
Lowe, Harry F.	Va	1913	E
Lowe, Harry F.	Vb	1914	E
Lowe, Harry F.	IIb	1912	E
Lowe, John C.	VII	1914	E
Luce, Harry A.	IIIa	1915	E
Luce, Harry A.	II	1904	D
Lucey, Edmund A.	V	1899	E
*McAlister, John W.	VIIb	1910	E
McAuliffe, Patrick D.	IIa	1904	E
McBride, Robert G.	Vb	1912	E
McCann, Martin	IIIa	1906	E
McCarthy, Joseph F.	IIIa	1915	E
McCartin, Marietta L.	VIIb	1909	E
McClure, Charles G.	IV	1910	D
McCool, Frank L.	VIa	1912	E
Macdonald, Chester W.	Va	1914	E
MacDonald, John F.	VIIb	1913	E
McDonald, William A.	I-V	1906	D
McDonnell, William H.	VId	1914	E
McElroy, Claude R.	Vb	1910	E
McElroy, Samuel H.			

\*Deceased



Name	Course	Class	Day or Evening
McGaunn, Charles	VI d	1915	E
McGaunn, Theodore	VI d	1915	E
McGee, David	IV a	1915	E
McGill, William E.	VII	1908	E
*McGovern, James	VII	1908	E
McGowan, Annie C.	III b	1913	E
McGowan, Frank R.	VI	1914	D
McGowan, Frank R.	VI	1915	D
McGrath, William F.	VII	1915	E
McGurn, James P.	VI d	1913	E
Mack, Clarence P.	III a	1914	E
Mackay, Stewart	III	1907	D
McKenna, Hugh F.	IV	1905	D
McKenna, Jeremiah J.	V b	1908	E
McLaughlin, Peter J.	I a	1906	E
McLay, John	V b	1906	E
McLay, John	II b	1909	E
McManus, Hugh	V	1905	E
McNamara, Thomas	V b	1911	E
Macnee, Forrest F.	II b	1914	E
MacPherson, Wallace A.	III	1904	D
McQuade, Hugh B.	V	1901	E
Mabbett, Albert L.	III a	1910	E
Madden, Peter	V a	1909	E
Maden, Harry	II b	1900	E
Maguire, Andrew F.	V b	1913	E
Maguire, James H.	VI	1905	E
Maguire, James H.	I a	1906	E
Maguire, James H.	II b	1915	E
Mahoney, Dennis J.	V b	1909	E
Mahoney, Joseph	V c	1914	E
Mailey, Howard T.	II	1908	D
Maker, Isaac A.	I a	1908	E
Manning, Frederick D.	IV	1910	D
Manning, James B.	IV a	1911	E
Manning, James B.	IV b	1913	E
Marjerison, Isaiah D.	II	1899	E
Marjerison, T. Sydney	III a	1907	E
Marjerison, T. Sidney	P. G. III a	1908	E
Marinel, Walter N.	I	1901	D
Marsden, Fred	III a	1915	E
Marsden, Phillips B.	IV a	1911	E
Marshall, Fred K. R.	VI	1908	E
Martin, Harry W.	IV	1911	D
*Martin, John C., Jr.	II a-b	1905	E
Martin, Willard E.	III a	1907	E
Mason, Archibald L.	VI	1909	D
Mason, Frederick A.	I a	1903	E
Mather, Harold T.	VI	1913	D
Maxcy, Leo M.	VI c	1910	E
Maynard, Wilfred B.	VII	1913	E
Meadows, William R.	I	1904	D
Mears, Lewis N.	IV a	1914	E
Meek, Lotta (See Parker, Mrs. Herbert L.)			
Merchant, Edith C.	III b	1900	D
Merrill, Allan B.	IV	1911	D

\*Deceased

Name	Course	Class	Day or Evening
Merrill, Edwin C.	VI	1904	E
Merrill, Lester C.	VIb	1915	E
Merriman, Earl C.	II	1907	D
Messiah, Hiram G.	Vb	1910	E
Metcalfe, Walter B.	IIb	1913	E
Michael, Joseph C.	Vb	1912	E
Micheltmore, Harry	IIIa	1906	E
Micheltmore, Harry	VII	1907	E
Midwood, Arnold J.	IV	1905	D
Miller, Emil H.	V	1904	E
Miller, Ernest P., Jr.	Ib	1913	E
Milot, Aram A.	Vb	1914	E
Milot, Joseph E.	VIc	1911	E
Minge, Jackson C.	I-V	1901	D
Minge, Jackson C.	IIIa	1901	E
*Moir, Alexander L.	IIIa	1899	E
*Moir, Alexander L.	P. G. IIIa	1903	E
Molloy, Andrew	V	1902	E
Molloy, Andrew	IIIa	1905	E
Molloy, Andrew	P. G. IIIa	1906	E
Molloy, Andrew	P. G. IIIa	1909	E
Monahan, Patrick H.	VI	1913	E
Moore, Everett B.	I	1905	D
Moore, Karl R.	IV	1911	D
Moorehouse, Thomas	VI	1904	E
Moorhouse, William R.	IV	1901	D
Morris, Frank A.	V	1901	E
Morrison, Fred C.	I	1903	D
*Mortenson, Carl W.	IIIa	1903	E
*Mortenson, Carl W.	IIa	1908	E
Morton, Albert N.	IIb	1906	E
Moss, Joseph	Ia	1915	E
Mountain, Everett R.	Ia	1915	E
*Mozley, Arthur	VI	1903	E
Muldoon, Joseph M.	VIb	1912	E
Mullen, Arthur T.	II	1909	D
Mullen, Frank J.	VI	1914	E
Munroe, Sydney P.	I	1912	D
Murphy, Cornelius D.	IIa	1906	E
Murphy, Howard H.	IIb	1911	E
Murphy, John H.	VI	1904	E
Murphy, Leo T.	Vc	1913	E
Murphy, Mrs. (Gookin, Alice L.)	IIIb	1910	E
Murray, James	IV	1913	D
Murray, James A.	II	1910	D
Musard, Albert E., Jr.	Vc	1909	E
Musard, Henry A.	Vc	1913	E
Myers, James W.	IIIa-IV	1903	E
Myers, James W.	VII	1907	E
Najar, G. Geo.	IV	1903	D
*Naylor, Charles	IVa	1912	E
Neel, Andrew, Jr.	IVa	1915	E
Nelson, Charles E.	IIb	1907	E
Nelson, Ernest H.	IIb	1900	E
Nelson, Ernest H.	IIa	1901	E
Nelson, Ernest H.	IIIa	1906	E
Nelson, Ernest H.	Ia	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Nelson, Ernest H.	Vc	1910	E
Nelson, Ernest H.	Ib	1913	E
Nelson, Gustave A.	Vb	1910	E
Nelson, James A.	Ia	1911	E
Nelson, Sigfred W.	VId	1911	E
Newall, J. Douglas	IV	1909	D
Newall, Preston	Ia	1911	E
Newcomb, Guy H.	IV	1906	D
Newsholme, Charles E.	VIb	1911	E
Neyman, Julius E.	IV	1915	D
Nichol, Samuel J.	IVa	1911	E
Nichol, Samuel J.	IVb	1914	E
Nichols, Clarence W.	Vb	1910	E
Nichols, Fernald H.	VIb	1914	E
Nichols, Nathan A.	VIb	1911	E
Nichols, Raymond E.	VI	1910	D
Nicholson, Richard	I Ib	1903	E
Nicoll, James K.	VId	1915	E
Nicoll, John	IVa	1910	E
Nicoll, John	IVb	1913	E
Niven, Robert S.	VI	1912	D
Noble, John T.	V	1899	E
Noble, John T.	IIIa	1901	E
Noonan, Denis T.	IIIa	1903	E
Notman, Frederick W.	Ia	1904	E
Nugent, Thomas A.	II-V	1899	E
Nugent, Thomas A.	VI	1902	E
Nutter, James R.	VI	1908	E
O'Brien, David A.	IV	1906	E
O'Brien, Frederick A.	VIb	1914	E
O'Brien, Michael F.	I Ib	1907	E
O'Brien, Philip F.	II	1915	D
O'Brien, Raymond L.	IVa	1915	E
Obst, Ehrich	VId	1915	E
O'Connell, Clarence E.	IV	1911	D
O'Connor, Frank H.	Ia	1915	E
O'Donnell, John D.	I-V	1904	D
Ogley, Samuel A.	I Ib	1900	E
O'Hara, William F.	IV	1904	D
O'Neill, Peter F.	IV	1905	E
Orrell, Ernest R.	VId	1913	E
Orrell, Frank L.	VIb	1909	E
Orrell, Frank L.	I Ib	1912	E
Orrell, Frank L.	Vb	1913	E
*Osbeck, William J.	IIIa	1908	E
Osgood, Charles F.	Ia	1900	E
Osgood, Charles F.	VI	1902	E
Overend, John	V	1905	E
Palm, Carl H.	VIa	1912	E
Palmer, G. Buel	IIIa	1903	E
Palmer, G. Buel	Vb	1909	E
Paquin, Joseph	VIa	1909	E
Paquin, Joseph	VIb	1910	E
Parker, B. Moore	I	1901	D
Parker, Everett N.	I-III-V	1904	D

\*Deceased

Name	Course	Class	Day or Evening
Parker, Everett N.	I	1905	D
Parker, Harry C.	V	1900	D
Parker, John G.	Va	1914	E
Parker, Mrs. Herbert L.	IIIb	1907	D
Parkin, Prescott R.	Vb	1911	E
Parkis, William L.	I	1909	D
Parsons, Joseph G.	IIIa	1909	E
Patrick, Alexander	IIIa	1904	E
Patterson, Alfred H.	IIIa	1908	E
Pearson, Alfred H.	IV	1911	D
Pearson, Fred	VIa	1909	E
Pease, Chester C.	I	1909	D
Peck, Carroll W.	IV	1913	D
Pedler, William A.	Ia	1906	E
Pedler, William A.	IVa	1911	E
Peel, Hudson	IIb	1901	E
Pendlebury, David	Ia	1915	E
Pendlebury, Harold	VI d	1915	E
Pensel, George R.	IV	1913	D
Perkins, John E.	III	1900	D
Perkins, J. Dean	III	1908	D
Perkins, Thomas, Jr.	Ia	1908	E
Perron, Francis J.	Vb	1911	E
Perry, Clarence R.	IIb	1911	E
Petterson, Birger	VIa	1910	E
Petty, George E.	I-V	1903	D
Phelps, Mary I.	IIIb	1910	E
Picken, William T.	IIIa	1908	E
Pickles, Wilfrid	Va	1914	E
Pierce, Duncan H.	VII	1914	E
Pierce, Gordon J.	Vb	1914	E
Pihl, Christian E.	VI	1906	E
Pihl, Ingrid I.	IIIb	1912	E
Pihl, Mansfred M.	VIb	1914	E
Pike, Daniel P.	IVa	1915	E
Pillsbury, Ray C.	I	1913	D
Pinkham, Banford O.	VI d	1914	E
Pittendreigh, John M.	Ia	1906	E
Playdon, Louis C.	Ia	1914	E
Plumer, Paul T.	Vb	1908	E
Plummer, Elliott B.	IV	1913	D
Poore, Herbert E.	IVa	1915	E
Porter, George K., Jr.	IIIa	1907	E
Porter, George K., Jr.	P. G. IIIa	1908	E
Porter, William E.	VIa	1915	E
Potter, Carl H.	I	1909	D
Potter, Richard W.	V	1902	E
Pottinger, James G.	II	1912	D
Pradel, Mrs. Alois J. (Walker, Anna)	IIIb	1903	D
Preble, George A.	IIIa	1908	E
Preble, George A.	Va	1912	E
Preble, George A.	Vb-c	1913	E
Preble, George A.	IVa	1915	E
Prescott, Walker F.	IV	1909	D
Prescott, William B.	Va	1912	E
Prince, Sylvanus C.	VI	1908	D
Proctor, Brame	IV	1908	D

Name	Course	Class	Day or Evening
Putnam, Leverett N.	IV	1910	D
Putnam, Philip C.	IV	1913	D
Quinn, James H.	VII	1913	E
Racicot, Marie E.	IIIb	1911	E
Ramsdell, Theodore E.	I	1902	D
Randall, William O.	IIb	1913	E
*Rasche, William A.	III	1903	D
Raymond, Charles A.	IV	1907	D
Read, Paul A.	VII	1907	E
Read, Paul A.	Va	1909	E
Reardon, Timothy H.	VI	1906	E
Redman, Henry S.	IIIa	1904	E
Redman, Henry S.	V	1905	E
Redman, Henry S.	Ia	1907	E
Redman, Henry S.	IV	1910	E
Redman, Henry S.	VIa	1912	E
Redman, Henry S.	Ib	1913	E
Redpath, Robert H.	VII	1913	E
Redpath, Robert H.	Vb	1914	E
Reed, Foster C. K.	VI	1904	E
Reed, Norman B.	I	1910	D
Regan, Joseph L.	VIb	1915	E
Reynolds, Eugene A.	VI	1906	E
Reynolds, Fred B.	II	1908	D
Reynolds, Hiram L.	IIIa	1901	E
Reynolds, Isabel H.	III-V	1903	D
Reynolds, Isabel H.	P. G. III-V	1906	D
Reynolds, James J.	Vc	1913	E
Rhodes, Joseph E.	V	1904	E
Rich, Edward	IV	1915	D
Rich, Everett B.	III	1911	D
Richards, Francis G.	IIa	1906	E
Richards, Raymond A.	IIIb	1915	E
Richardson, Richardson P.	I	1913	D
Riley, Edward T.	IIIa	1912	E
*Ritter, Alfred E.	IIb	1907	E
Robbins, John	IIb	1907	E
Roberson, Pat H.	I	1905	D
Roberts, Carrie I.	IIIb	1905	D
Roberts, Joseph	Vb	1915	E
Robinson, Ernest W.	IV	1908	D
Robinson, James E.	VII	1911	E
Robinson, Ruddach P.	VII	1911	E
Robinson, Thomas	Ia	1909	E
Robinson, Thomas	Vc	1910	E
Robinson, William C.	III-V	1903	D
Robson, Frederick W. C.	IV	1910	D
Roche, Raymond V.	IV	1912	D
Rockwell, Henry D.	IIa	1903	E
Rockwell, Samuel F.	IIa	1902	E
Rodger, Thomas C.	IVa	1915	E
Roesler, Alfred	IIIa	1914	E
Rogers, John F.	Ia	1911	E
Rollins, Henry E.	VII	1912	E
Rollins, Sidney R.	IIb	1913	E

\*Deceased



Name	Course	Class	Day or Evening
Rooney, George W.	Ia	1904	E
Root, Francis X., Jr.	IIIa	1910	E
Rouine, Francis E.	VIb	1914	E
*Rowell, Herman C.	Ia-IIb	1900	E
Rowlands, Harold	Va	1911	E
Royds, James	Ia	1912	E
Rundlett, Arnold D.	VI	1912	D
Rushworth, Walter	VI	1906	E
Ryan, Edward P.	Ia	1909	E
Saalfrank, Joseph C.	IIIa	1908	E
Sanborn, Harold S.	VII	1915	E
Saunders, Edward B.	IIIa	1901	E
Saunders, Harold F.	IV	1909	D
Savage, Charles F.	IVa	1912	E
Sawyer, Joseph W.	IV	1915	D
Scally, Edward	VI	1908	E
Scanlon, Edward J.	IIb	1901	E
Schermerhorn, George E.	Ia	1902	E
Şchermerhorn, George E.	Va	1908	E
Schmidt, Hartman F.	IIb - VII	1914	E
Schmidt, Hartman F.	IIa	1915	E
Schofield, John S.	IIIa	1903	E
Schoon, Fenton	IIb	1903	E
Schubert, George J.	V	1906	E
Schubert, George J.	IIIa	1909	E
Schuerfeld, Harry W.	IIIa	1909	E
Schuster, William F.	VII	1908	E
Scully, Patrick F.	IIIa-VII	1915	E
Seddon, N. Graham	IIIa	1908	E
Semple, Alexander	IIIa	1908	E
Senior, George	Va	1906	E
Senior, George	Ia-Vc	1907	E
Shackleton, John H.	IV	1908	E
Shackleton, John H.	Ia	1910	E
Shaffer, William A.	VId	1911	E
Shannon, Philip J.	V	1901	E
Sharpe, John R.	VI	1906	E
Shaw, James	V	1904	E
Shaw, William	VIa	1913	E
Shea, Francis J.	II	1912	D
Shearer, David D.	VII	1912	E
Shearer, David D.	Vb	1913	E
Shearer, William A.	Vb	1915	E
Shedd, Howard P.	IVb	1915	E
Sheppard, Byron H.	VI	1906	E
Shields, John J.	Va	1911	E
Sidebottom, Leon W.	IV	1911	D
Silcox, Arthur E.	Ia	1900	E
Silk, Frederick C. M.	IV	1905	E
Silk, Patrick E.	VII	1906	E
Simmers, Arthur A.	VIb	1915	E
Simola, Emil J.	IIa-b	1905	E
Simoneau, Verner W.	VI	1908	E
Skidmore, Russell P.	VIb	1912	E
Skinner, Clarence W.	IIIa	1905	E

\*Deceased

Name	Course	Class	Day or Evening
Skinner, Clarence W.	P. G. IIIa	1906	E
Skinner, Clarence W.	VII	1907	E
Sleeper, Robert R.	IV	1900	D
Sleeper, Robert R.	VII	1913	E
Smart, George A.	Va	1915	E
*Smith, Albert A.	I	1899	D
Smith, Arthur	IIIa	1905	E
Smith, Arthur	P. G. IIIa	1906	E
Smith, Arthur	Va	1906	E
Smith, Arthur	Vc	1907	E
Smith, Arthur	P. G. IIIa	1909	E
Smith, Doane W.	II	1910	D
Smith, Edward	Ia	1904	E
Smith, Ernest B.	Vb	1907	E
*Smith, Fred	IIb	1901	E
Smith, George A.	IIIa	1905	E
Smith, George A.	P. G. IIIa	1906	E
Smith, George A.	VII	1909	E
Smith, Gordon N.	IVa	1915	E
Smith, James	Vb	1907	E
Smith, John W.	IIb	1904	E
Smith, Leonard	VIa	1914	E
Smith, Mae V.	IIIb	1915	E
Smith, Miles H.	IIb	1915	E
Smith, Percy H.	Vb	1907	E
Smith, Ralston F.	I	1904	D
Smith, Stephen E.	I	1900	D
Smith, Theophilus G., Jr.	IV	1910	D
Smith, William E.	IIIa	1905	E
Smith, William E.	P. G. IIIa	1906	E
Smith, William E.	VII	1907	E
Smith, William E.	P. G. IIIa	1909	E
Smith, William F.	VId	1912	E
Smith, William H.	IIb	1902	E
Snelling, Fred N.	II	1903	D
Snickers, Eugene	Ia	1915	E
Snow, Fred L.	IV	1900	E
Soule, William N.	VId	1913	E
Spedding, Ephraim H.	IIIa	1899	E
Spiegel, Edward	V	1903	D
Spurr, Albert R.	VII	1908	E
Spurr, James H., Jr.	IV	1908	E
Stafford, James	Va	1915	E
Stahl, Milton C.	IIb	1915	E
Standish, John C.	IV	1911	D
Stanley, John R.	IIb	1911	E
Stearns, Orlo F.	IVa	1911	E
Steere, Samuel A.	Va	1914	E
Sterling, Walter	IIIa	1904	E
Stevens, Dexter	I	1904	D
Stevens, Frank W.	VI	1905	E
Stevens, Harold S.	IIIa	1912	E
Stevenson, Murray R.	III-V	1903	D
Stevenson, Robert P.	Ia	1912	E
Stevenson, William	II	1899	E

\*Deceased

Name	Course	Class	Day or Evening
Stevenson, William	IIIa	1902	E
Stewart, Arthur A.	II	1900	D
Stewart, Charles	Va	1908	E
Stewart, George	Ia-IVa	1911	E
Stewart, George	Va	1914	E
Stewart, Walter L.	III	1903	D
Stewart, Warren D.	IVa	1915	E
Stewart, William W.	IV	1910	E
Stiehler, Arthur F.	Vb	1915	E
Stocks, Carl W.	VIa	1909	E
Stohn, Alexander C.	III-V	1906	D
Stokham, Burton I.	IV	1903	E
Stokham, Burton I.	P. G. IV	1904	E
Stokham, Ernest F.	IVa	1914	E
Stone, Ira A.	IV	1909	D
Stopherd, William H.	II-V	1899	E
Stopherd, William H.	VI	1902	E
Stopherd, William H.	IIIa	1905	E
Stopherd, William H.	P. G. IIIa	1906	E
Stopherd, William H.	P. G. IIIa	1909	E
Stopherd, William H.	VII	1910	E
Storer, Francis E.	II	1907	D
Stott, Bertram S.	Vb	1910	E
Stott, Samuel	IV	1910	E
Stronach, Irving N.	IV	1910	D
*Stursberg, Paul W.	II	1907	D
Sugden, Albert G.	IIIa	1912	E
Sugden, Albert G.	VII	1913	E
*Sullivan, Humphrey F.	Ia	1909	E
Sullivan, John D.	VI	1912	D
Sullivan, Michael F.	VIIb	1910	E
Sullivan, Michael F.	VIa	1913	E
Swan, Guy C.	II	1906	D
Swanson, Victor E.	IVa	1912	E
Swift, Edward S.	V	1899	E
Swift, Edward S.	Ia	1901	E
Swift, Edward S.	I	1902	D
Swift, John W.	IIb	1915	E
Sykes, Alvin E.	VIa	1909	E
Sylvain, Charles E.	VI	1913	D
Syme, James F.	II	1900	D
Tarpey, John F.	IIa	1904	E
Taylor, Harold S.	VIIb	1912	E
Teichmann, Alfred A.	Vb	1908	E
Tennant, Joseph A.	VIIb	1911	E
Thaxter, Joseph B., Jr.	II	1912	D
Thomas, Roland V.	I	1905	D
Thompson, Charles B.	VI	1904	E
Thompson, Everett L.	I	1905	D
Thompson, George	Vb	1915	E
Thompson, Henry J.	IV	1900	D
Tilton, Elliott T.	II	1899	D
Todd, Henry	VII	1910	E
Tonge, John	IV	1905	E
Tonge, Matthew	IIIa	1903	E

\*Deceased

Name	Course	Class	Day or Evening
Toovey, Sidney E.	V	1904	D
Torpey, Henry K. W.	VIIb	1914	E
Torpey, Henry K. W.	IVa	1915	E
Toshach, Reginald A.	II	1911	D
Towers, Frederic G.	Ia	1912	E
Tucker, John T.	Ia	1908	E
Tucker, John T.	Va	1909	E
Turgeon, Roderick	IVa	1912	E
Turner, Roscoe C.	IIb	1914	E
Twomey, Hugh	VIId	1914	E
Umpleby, Thomas B.	V	1902	E
Upton, Frank A.	Ia	1903	E
*Varney, Manley H.	IIIIa	1902	E
*Varney, Manley H.	Ia	1903	E
Varnum, Arthur C.	II	1906	D
Varnum, Arthur C.	Vb	1907	E
Varnum, Arthur C.	P. G. IIIa	1908	E
Varnum, Arthur C.	VII	1909	E
Vause, John	Va	1912	E
Vogt, Alfred H.	IIIIa	1902	E
Vogt, Alfred H.	IIb	1909	E
Vogt, Harry A.	Vb	1906	E
Wade, Frank J.	Vb	1911	E
Wahlberg, Einar S.	Ia	1907	E
Wainwright, Harold	IVa	1913	E
Walen, Ernest D.	VI	1913	D
Walen, Ernest D.	VI	1914	D
Walker, Alfred S.	II	1911	D
Walker, Anna G. (See Pradel, Mrs. Alois J.)			
Walker, David	IIIIa	1902	E
Walker, David	P. G. IIIa	1903	E
Walker, John J.	VIIb	1915	E
Walker, William, Jr.	VII	1906	E
Walsh, Michael L.	Ia	1909	E
Walton, Frank L.	Ia	1911	E
Walworth, Walter F.	VIIb	1915	E
Ward, Bernard D.	IIIIa	1911	E
Ward, Herbert H.	Vb	1912	E
Ward, James J.	VII	1906	E
Wardrobe, William L.	Ia	1900	E
Ware, Edward W.	IIIIa	1909	E
Warren, Philip H.	II	1905	D
Waterhouse, Joseph	IV	1900	E
Waters, Thomas W., Jr.	Va	1915	E
Waterworth, Frank W.	Vb	1907	E
Watson, Luther F.	IIb	1909	E
Watson, William	III	1911	D
Webb, Francis H.	V	1904	E
Webb, Francis H.	IIIIa	1907	E
Webb, Frank H.	IV	1904	D
Webber, Arthur H.	IV	1901	D
Webber, John F.	IIIIa	1907	E
Webber, John F.	P. G. IIIa	1908	E
Webster, Orrin H.	Ia	1912	E
Weigel, Frederick A.	VIIb	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Weinhold, William F.	IIIa	1915	E
Weinz, W. Elliot	IV	1908	D
Welch, Benjamin L.	VIIb	1910	E
Wesson, Paul B.	Ia	1901	E
Wheelock, Stanley H.	II	1905	D
*Whitcomb, Harry E.	Ia	1906	E
Whitcomb, Roscoe M.	IV	1910	D
White, Royal P.	II	1904	D
Whitehead, Bennett	IIb	1901	E
Whitehill, Warren H.	IV	1912	D
Whitley, Arthur M.	IIa-IIb	1915	E
Whitman, William P.	IVa	1910	E
Whitman, William P.	IVb	1913	E
Whitney, Frederick A.	IV	1910	E
Whittaker, Thomas B.	IIb	1907	E
Whittaker, Thomas B.	IIb	1908	E
Wicks, Frederic M.	IIIa	1912	E
Wiggin, Leon M.	IIIa	1907	E
Wiggin, Leon M.	P. G. IIIa	1908	E
Wightman, William H.	IV	1906	D
Wilde, Herman E.	IVa	1915	E
Wilde, Thomas E.	IIa	1905	E
Wilkinson, Joseph	IIIa	1912	E
Wilkinson, Joseph	VII	1913	E
Wiley, Frank S.	Ia	1901	E
Willgeroth, Henry J.	IIIa	1908	E
Williams, Allen R.	Ia	1910	E
Williams, Allen R.	Va	1911	E
Williamson, Isaac F.	IV	1901	E
Willmott, Herbert J.	VIa	1911	E
Wilmot, Joseph	IIIa	1908	E
Wilmot, William	IIIa	1899	E
Wilson, Calvin E.	IIb	1902	E
Wilson, George H.	IIb	1902	E
Wilson, John S.	II	1903	D
*Wilson, Walter E. H.	I-V	1904	D
Wilton, George H.	IIIa	1899	E
Wing, Charles T.	IIIa	1900	E
Wing, Charles T.	III	1902	D
Wingate, William H.	IV	1908	D
Winslow, Warren A.	IIb	1915	E
Wise, Paul T.	II	1901	D
Wiswall, Frank T.	V	1905	E
Wolf, William C.	Va	1907	E
Wolf, William C.	Vb	1908	E
Wolger, John J.	IIIa	1907	E
Wollin, Frederick W.	Va	1911	E
Wood, Arthur S.	Va	1912	E
Wood, Ernest H.	IV	1911	D
Wood, Herbert C.	I	1906	D
Wood, J. Carleton	IV	1909	D
Wood, Jonathan	Ia	1902	E
Wood, Jonathan	Va	1908	E
Wood, Samuel J.	Ia	1915	E
Woodbury, Eugene P.	VII	1914	E

\*Deceased



Name	Course	Class	Day or Evening
Woodbury, W. Sanford	Ia	1900	E
Woodcock, Eugene C.	II	1907	D
Woodies, Ida A.	IIIb	1900	D
Woodies, Ida A.	P. G. IIIb	1901	D
Woodman, Harry L.	I-III-V	1902	D
Woodruff, Charles B.	V	1906	D
Worthington, John A.	Ia	1910	E
Wright, Edward, Jr.	II	1905	D
Wright, Frederick J.	Vb	1911	E
Yare, John F.	Vb	1907	E
Yavner, Harry	II	1912	D
Young, Richard, Jr.	Va	1908	E
Young, Richard, Jr.	Vc	1909	E
Younger, Andrew	IIIa	1913	E
Younger, Andrew	VII	1914	E
Zimmer, George D.	IVa	1915	E

## REGISTER OF GRADUATES

The following list has been corrected in accordance with information received previous to March 1, 1916. Any information regarding incorrect or missing addresses and occupations is earnestly solicited.

P. G. indicates Post Graduate Course.

### Day Course, 1899

Name	Diploma Course	Graduates Occupation
Bailey, Joseph W.	I	Superintendent, Davis Mills, Fall River, Mass.
Cuttle, James H.	II	Textile Analyst, 309 Broadway, New York City.
Fels, August B.	II	With William Fels, Inc., New York City.
Harmon, Charles F.	I	Deceased.
Smith, Albert A.	I	Deceased.
Tilton, Elliott T.	II	With Western Electric Co., Boston, Mass.

#### Certificate Holders

Burrage, Katherine C.	IIIb	Died May 16, 1914.
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### Evening Course, 1899

#### Certificate Holders

Berry, Frank M.	IIIa	Deceased.
Binns, Heaton	II-V	Foreman, Worsted Department, Shuttleworth Bros. Co., Amsterdam, N. Y.
Broadbent, James T.	Ia	Agent, Meritas Mills of Columbus, Ga., and Manager Textile Dept., Standard Oil Co., New York City.
Collier, John	IIIa	Superintendent, Royalston Mills, South Royalston, Mass.
Crompton, Henry H.	II	Overseer, Worsted Yarns, Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIIa	General Manager, Merrimac Mills, Methuen, Mass.
Kellett, Irvine	II	Second Hand, Worsted Yarns, Pacific Mills, Lawrence, Mass.
McAlister, John W.	V	Deceased.
Marjerison, Isaiah D.	II	Overseer, Worsted Combing, Lower Pacific Mills, Lawrence, Mass.
Moir, Alexander L.	IIIa	Died December, 1914.
Noble, John T.	V	Overseer, Sawyer Woolen Mills, Dover, N. H.
Nugent, Thomas A.	II-V	Foreman, Yund, Kennedy & Yund, Amsterdam, N. Y.
Spedding, Ephraim H.	IIIa	Lowell, Mass.
Stevenson, William	II	Superintendent, Spray Woolen Mill Co., Spray, N. C.

Name	Course	Occupation
Stopherd, William H.	II-V	With Saco-Lowell Shops, Lowell, Mass.
Swift, Edward S.	V	Instructor in Classics and Mathematics, College of St. Francis Xavier, New York City.
Wilmot, William	IIIa	Designer, Hamilton Webb Co., Hamilton, R. I.
Wilton, George H.	IIIa	

### Day Course, 1900

#### Diploma Graduates

Baldwin, Arthur L.	IV	Chemist, Monarch Chemical Laboratory, Lowell, Mass.
Barr, I. Walwin	I	Styler, F. U. Stearns & Co., New York City.
Bodwell, Henry A.	II	Superintendent, Smith and Dove Mfg. Co., Andover, Mass.
Brickett, Chauncey J.	II	Principal, School of Textiles, International Correspondence Schools, Scranton, Pa.
Lamson, George F.	I	With Society for Establishing Useful Manufactures, Paterson, N. J.
Perkins, John E.	III	Superintendent, S. N. and C. Russell Mfg. Co., Pittsfield, Mass.
Pradel, Alois J.	III	Superintendent, Montrose Woolen Mills, Woonsocket, R. I.
Sleeper, Robert R.	IV	Instructor in Dyeing, Lowell Textile School, Lowell, Mass.
Smith, Stephen E.	I	Head Instructor, Cotton Department, Lowell Textile School, Lowell, Mass.
Stewart, Arthur A.	I	Head Instructor, Finishing, Lowell Tex- tile School, Lowell, Mass.
Syme, James F.	II	With American Felt Co., Boston, Mass., and Agent, Hawthorne Mills, Boston, Mass.
Thompson, Henry J.	IV	Dyer, Boston Rubber Shoe Co., Malden, Mass.

#### Certificate Holders

Burrage, Katherine C.	P. G. IIIb	Deceased.
Campbell, Laura E.	IIIb	Died 1915.
Harrison, Mrs. (Goodhue, Amy H.)	IIIb	Dracut, Mass.
Lakeman, Fannie S.	IIIb	Designer, Salem, Mass.
Leach, John P.	I-V	Farmer, Littleton, N. C.
Merchant, Edith C.	IIIb	Supervisor of Drawing, Public Schools, Pepperell, Mass.
Parker, Harry C.	V	With George L. Parker, Boston, Mass.
Woodies, Ida A.	IIIb	Decorator, Lowell, Mass.

### Evening Course, 1900

#### Certificate Holders

Campbell, Albert D.	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Cawthra, Albert B.	IIb	
Colby, Arthur D.	Ia	Draftsman, Saco-Lowell Shops, Newton Upper Falls, Mass.

Name	Course	Occupation
Donnelly, James	Ia	Deceased.
Elston, Frederick R.	IIIa	Superintendent, Sonnhill Worsted Co., Danielson, Conn.
Howard, John	V	Overseer, Weaving, Thos. Kent Mfg. Co., Clifton Heights, Pa.
Hutton, Clarence	V	Editor, Bragdon, Lord and Nagle Co., Boston, Mass.
Jones, William J.	IIb	Overseer, Worsted Spinning, U. S. Bunting Co., Lowell, Mass.
Maden, Harry	IIb	
Nelson, Ernest H.	IIb	With Accident Insurance Company of the Masonic Protection Association, Lowell, Mass.
Ogley, Samuel A.	IIb	Overseer, Worsted Spinning, Steere Worsted Mills, Providence, R. I.
Osgood, Charles F.	Ia	Draftsman, General Electric Company, Lynn, Mass.
Rowell, Herman C.	Ia-IIb	Deceased.
Silcox, Arthur E.	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Snow, Fred L.	IV	Granite Contractor, Snow & Horsfall, Lowell, Mass.
Wardrobe, William L.	Ia	
Waterhouse, Joseph	IV	Lowell, Mass.
Wing, Charles T.	IIIa	Designer, Middlesex Mfg. Company, Lowell, Mass.
Woodbury, W. Sanford	Ia	Superintendent of Carding and Finishing, Bay State Cotton Corp., Newburyport, Mass.

### Day Course, 1901

#### Diploma Graduates

Buchan, Donald C.	II	Assistant Superintendent, Stevens Mills, North Andover, Mass.
Currier, John A.	II	Superintendent, Pentucket Mills, M. T. Stevens and Sons Co., Haverhill, Mass.
Ewer, Nathaniel T.	IV	Chemist, American Dyewood Co., Chester, Pa.
Foster, Clifford E.	II	Superintendent, J. T. Bailey Co., Philadelphia, Pa.
Kingsbury, Percy F.	IV	Head of Color Department, Passaic Print Works, Passaic, N. J.
Marinel, Walter N.	I	Automobile Repairing and Supplies, North Chelmsford, Mass.
Moorhouse, William R.	IV	Chemist, Cassella Color Co., Boston, Mass.
Parker, B. Moore	I	Instructor, Carding and Spinning, A. and M. College, West Raleigh, N. C.
Webber, Arthur H.	IV	Chemist and Dyer, Melville Color Co., Beverly, Mass.
Wise, Paul T.	II	General Manager, Chelsea Fibre Mills, Brooklyn, N. Y.

### Certificate Holders

Bradley, Richard H.	V	Second Hand, Hargreaves Mill No. 2, Fall River, Mass.
Harrison, Mrs. (Goodhue, Amy H.)	P. G. IIb	See Day, 1900.
Minge, Jackson C.	IV	
Woodies, Ida A.	P. G. IIb	See Day, 1900.

### Evening Course, 1901

#### Certificate Holders

Aspinwall, William	IIb	Coats Thread Mill, Pawtucket, R. I.
Berry, Frank M.	V	Deceased.
Brooks, Noah	IIIa-V	
Burghardt, Paul C.	IIa	
Buzzell, William O.	IIIa	Overseer, Weaving, Dartmouth Mfg. Corp., New Bedford, Mass.
Cheetham, John James	IIIa	Overseer, Cabot Mfg. Co., Brunswick, Me.
Chippindale, Ernest W.	IIb	Pile Wire Maker, Frank Parker Pile Wire Co., Lowell, Mass.
Cowdell, Herbert	V	With Ipswich Mills, Lowell, Mass.
Davis, Henry	IIb	Deceased.
Donovan, Daniel F.	IIa	
Evison, William A.	V	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Farrell, Thomas	IIa	Woolen Spinner, Stirling Mills, Lowell, Mass.
Frame, William C.	V	Overseer, Johnson & Johnson, New Brun- swick, N. J.
Gagan, John H.	V	Clinton, Mich.
Grant, Archibald	IIb	Lowell, Mass.
Grouke, Michael	IIb	Overseer, Worsted Drawing, Bigelow Car- pet Company, Lowell, Mass.
Hill, Daniel	IIb	Overseer, Passaic Worsted Spinning Co., Passaic, N. J.
Hitchcock, Thomas B.	Ia-IIa-IIIa	Textile Merchandising, Export and Im- port, Boston, Mass.
Holgate, Charles H.	IIa	With A. R. Andrews, Boston, Mass.
Hunter, Ralph	IIIa	With Hall, Hartwell and Company, New York City.
Jones, William J.	IIa	See Evening, 1900.
Killerby, Walter	IIb	Overseer, Park Worsted Mill, Lowell, Mass.
Law, Alfred	IIb	Overseer, Arlington Mills, Lawrence, Mass.
Lord, Wilfred	IIIa	Assistant Superintendent, Worsted Dept., Pacific Mills, Lawrence, Mass.
McQuade, Hugh B.	V	Die Setter, U. S. Cartridge Co., Lowell, Mass.
Minge, Jackson C.	IIIa	
Morris, Frank A.	V	
Nelson, Ernest H.	IIa	See Evening, 1900.
Noble, John T.	IIIa	See Evening, 1899.
Peel, Hudson	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Reynolds, Hiram L.	IIIa	Agent, Saunders Cotton Mills, Saunders- ville, Mass.



Name	Course	Occupation
Saunders, Edward B.	IIIa	Salesman, Remington Typewriter Co., Fall River, Mass.
Scanlon, Edward J.	I Ib	Wood and Coal Dealer, Lawrence, Mass.
Shannon, Philip J.	V	Die Maker, Tubular Rivet and Stud Company, Wollaston, Mass.
Smith, Fred	I Ib	Deceased.
Swift, Edward S.	Ia	See Evening 1899.
Wesson, Paul B.	Ia	Mechanical Superintendent, Wright Wire Co., Palmer, Mass.
Whitehead, Bennett	I Ib	Overseer, Wood Worsted Mills, Lawrence, Mass.
Wiley, Frank S.	Ia	Second Hand, Picking and Carding, Pacific Mills, Lawrence, Mass.
Williamson, Isaac F.	IV	Foreman Dyer, Hamilton Mfg. Co., Lowell, Mass.

### Day Course, 1902

Diploma Graduates		
Burnham, Frank E.	IV	Color Chemist, Schoellkopf Aniline & Chemical Co., Buffalo, N. Y.
Carter, Robert A.	IV	Textile Chemist, Roessler & Hasslacher Chemical Company, New York City.
Craig, Clarence E.	III	Farmer, Derry, N. H.
Haskell, Walter F.	IV	Overseer of Dyeing, Dana Warp Mills, Westbrook, Me.
Ramsdell, Theodore E.	I	Cotton Manufacturer, Monument Mills, Housatonic, Mass.
Swift, Edward S.	I	See Evening, 1899.
Wing, Charles T.	III	See Evening, 1900.

### Certificate Holders

Curran, Charles E.	II-III-V	Head Designer, Wood Worsted Mills, Lawrence, Mass.
Ferguson, Arthur F.	I	Head of Textile Dept., Rhode Island School of Design, Providence, R. I.
Harris, George S.	I	Agent, Lanett Cotton Mills, Lanett, Ala.
Holgate, Benjamin	III	Cost Accountant, Boott Mills, Lowell, Mass.
Woodman, Harry L.	I-III-V	Draftsman, Saco-Lowell Shops, Lowell, Mass.

### Evening Course, 1902

Certificate Holders		
Name	Course	Occupation
Adams, William R.	IIa	North Andover, Mass.
Barlow, Robert	V	Lowell, Mass.
Binns, Heaton	VI	See Evening, 1899.
Bowring, George P. B.	VI	Optometrist, Lowell, Mass.
Brainerd, Irving L.	Ia	Deceased.
Burghardt, Edward S.	IIa	
Buzzell, William O.	P. G. IIIa	See Evening, 1901.
Cheetham, John James	P. G. IIIa	See Evening, 1901.
Collier, John	P. G. IIIa	See Evening, 1899.

Name	Course	Occupation
Cowdrey, Charles E.	V	Overseer, Talbot Mills, North Billerica, Mass.
Cremin, Daniel J.	Ia	
Donnellan, Frank T.	IIa	Lowell, Mass.
Dudley, George E.	Ia	Salesman, Holman's National School of Accounting, Portland, Me.
Ferguson, Thomas	V	Overseer, Boott Mills, Lowell, Mass.
Field, Charles W.	VI	Carpenter and Builder, Winter Hill Station, Boston, Mass.
Forrest, Fred G.	IIa	
Fortune, David A.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	P. G. IIIa	See Evening, 1899.
Good, Henry	Ia	Providence, R. I.
Haigh, Walter	IIIa	
Haworth, Joseph	VI	Travelling Mechanical Engineer, C. G. Sargent's Sons Corp., Graniteville, Mass.
Hogan, James A.	V	Hogan Bros., Lowell, Mass.
Hoyle, Edward	IIb	President and Manager, Allerton Worsted Mills, Lowell, Mass.
Johnson, Ernest A.	IIa-b	Superintendent Finishing Dept., Washington Mills, Lawrence, Mass.
Kelly, Michael H.	Ia	Overseer, Appleton Co., Lowell, Mass.
Kent, Ernest J.	IIb	Section Hand, English Drawing, Lower Pacific Mills, Lawrence, Mass.
Lamont, Walter M.	IIb	Agent, Wood Worsted Mill, Lawrence, Mass.
Lawliss, Augustine J.	V	Lowell, Mass.
Lee, Charles	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Leith, Edwin E.	IIIa	Superintendent, Thos. Kent Mfg. Co., Clifton Heights, Pa.
Libby, C. Robert	VI	Assistant Engineer, Locks & Canals, Lowell, Mass.
Molloy, Andrew	V	In City Water Department, Lowell, Mass.
Nugent, Thomas A.	VI	See Evening, 1899.
Osgood, Charles F.	VI	See Evening, 1900.
Potter, Richard W.	V	Overseer, Weaving, Massachusetts Cotton Mills, Lowell, Mass.
Rockwell, Samuel F.	IIa	Superintendent, Mule Dept., Davis and Furber Machine Co., No. Andover, Mass.
Schermerhorn, George E.	Ia	Superintendent, Chipman Mfg. Co., Easton, Pa.
Smith, William H.	IIb	Stamp Clerk, Post Office, Lawrence, Mass.
Stevenson, William	IIIa	See Evening, 1899.
Stopherd, William H.	VI	See Evening, 1899.
Umpleby, Thomas B.	V	Designer and Assistant Superintendent, Stanley Woolen Company, Uxbridge, Mass.
Varney, Manley H.	IIIa	Died January, 1916.
Vogt, Alfred H.	IIIa	Designing Dept., George E. Kunhardt's Mills, Lawrence, Mass.
Walker, David	IIIa	Overseer, Burlington Mills, Winooski, Vt.

Name	Course	Occupation
Wilson, Calvin E.	IIb	Overseer, F. A. Straus Co., Trenton, N. J.
Wilson, George H.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Wood, Jonathan	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.

### Day Course, 1903

#### Diploma Graduates

Bloom, Wilfred N.	IV	Buyer, Riker Hegeman, New York City.
Campbell, Orison S.	II	Felt Supervisor, Canadian Consolidated Felt Co., Ltd., Berlin, Ont.
Chamberlin, Frederick E.	I	Overseer of Spinning, Monument Mills, Housatonic, Mass.
Emerson, Frank W.	II	Agent, Moosup Mills, Moosup, Conn.
Evans, Alfred W.	III	Arlington Mills, Lawrence, Mass.
Evans, William R.	III	Foreman, Durgin Shoe Co., Haverhill, Mass.
Ferguson, Arthur F.	I	See Day, 1902.
Fuller, George	I	Associate Editor, American Wool and Cotton Reporter, New York City.
Gerrish, Walter	III	Salesman, Allen Lane Co., Boston, Mass.
Morrison, Fred C.	I	Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
Najar, G. George	IV	Overseer of Dyeing, Monument Mills, Housatonic, Mass.
Rasche, William A.	III	Deceased.
Snelling, Fred N.	II	With American Express Co., Haverhill, Mass.
Stewart, Walter L.	III	Cotton Goods Converter, Charles Kohlman & Co., Inc., New York City.
Wilson, John S.	II	Manager, Union Square Dept., Germania Life Insurance Co., New York City.

#### Certificate Holders

Bennett, Edward H.	V	Publisher, F. P. Bennett and Co., Inc., Boston, Mass.
Campbell, Louise P.	IIIb	Designer, Winchester, Mass.
Holgate, Benjamin	V	See Day, 1902.
Hutton, Clarence	III	See Evening, 1900.
Petty, George E.	I-V	Electric Sales Contractor, Greensboro, N. C.
Pradel, Mrs. Alois J. (Walker, Anna G.)	IIIb	37 Earl St., Woonsocket, R. I.
Reynolds, Isabel H.	III-V	Clerk, Arlington Mills, Lawrence, Mass.
Robinson, William C.	III-V	Inspector, H. F. Livermore & Co., Boston, Mass.
Spiegel, Edward	V	In theatrical business, New York City.
Stevenson, Murray R.	III-V	Clinton, Mass.

### Evening Course, 1903

#### Certificate Holders

Adams, Henry S.	IIa	Secretary and Treasurer, The Springstein Mills, Chester, S. C.
Balmforth, James H.	IIa	Postal Clerk, P. O., Bloomfield, N. J.
Barry, Edward J.	IIIa	Overseer, Salmon Falls Mfg. Co., Salmon Falls, N. H.

Name	Course	Occupation
Bastow, Henry	IIIa	Textile Inspector, U. S. Army, Philadelphia, Pa.
Baxter, Alvah J.	IIa	Clerk, Wood Worsted Mills, Lawrence, Mass.
Byam, Walter S.	VI	Clerk, Saco-Lowell Shops, Lowell, Mass.
Cady, Dennis J.	V	Loomfixer, Washington Mills, Lawrence, Mass.
Donnellan, Frank T.	V	See Evening, 1902.
Flynn, John J.	VI	Assistant Engineer, City of Lowell Fire Dept., Lowell, Mass.
French, Mrs. (Balmforth, Martha)	IIIa	Lowell, Mass.
Garner, William	IIIa	Order Clerk and Telegrapher, Warren Bros. Co., East Cambridge, Mass.
Gaunt, Alfred C.	IIa	See Evening, 1899.
Goodchild, George	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Gray, Finley M.	VI	Clerk, Merrimack Mfg. Co., Lowell, Mass.
Higgins, James A.	IIa	
Howard, John	IIIa	See Evening, 1900.
Hunter, Ralph	V	See Evening, 1901.
Jennings, James J.	IIIa	Overseer of Weaving, Jenckes Spinning Co., Pawtucket, R. I.
Johnson, Samuel L.	V	Overseer, Weaving, Walworth Bros., Lawrence, Mass.
Keleher, John J.	IIb	Overseer, Drawing Dept., Prospect Mill, Lawrence, Mass.
Knowles, Frank E.	Ia	Inspector, Factory Mutual Insurance Co., Boston, Mass.
Lawrence, Charles	Ia	
Leach, Joseph W.	V	Designer, Pacific Mills, Lawrence, Mass.
Lincourt, Hector L.	VI	Draftsman, United Shoe Machinery Co., Beverly, Mass.
Lord, Wilfred	IIb	See Evening, 1901.
Mason, Frederick A.	Ia	Mule Spinner, Saxony Worsted Mills, Newton, Mass.
Moir, Alexander L.	P. G. IIIa	Died December, 1914.
Mortenson, Carl W.	IIIa	Died, 1914.
Mozley, Arthur	VI	Deceased.
Myers, James W.	IIIa-IV	Assistant Superintendent, U. S. Bunting Co., Lowell, Mass.
Nicholson, Richard	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Noonan, Denis T.	IIIa	Superintendent, Berkshire Woolen & Worsted Co., Pittsfield, Mass.
Palmer, G. Buel	IIIa	Proprietor and Manager, Cross Awning Co., Lowell, Mass.
Rockwell, Henry D.	IIa	Clerk, Davis and Furber Machine Co., No. Andover, Mass.
Schofield, John S.	IIIa	Designer, Berkshire Woolen and Worsted Co., Pittsfield, Mass.
Schoon, Fenton	IIb	Section Hand, Worsted Drawing, Farr Alpaca Co., Holyoke, Mass.
Stokham, Burton I.	IV	
Tonge, Matthew	IIIa	Weaver, Dartmouth Mfg. Co., New Bedford, Mass.



Name	Course	Occupation
Upton, Frank A.	Ia	Superintendent of Carding, Boott Mills, Lowell, Mass.
Varney, Manley H.	Ia	Died January, 1916.
Walker, David	P. G. IIIa	See Evening, 1902.

### Day Course, 1904

#### Diploma Graduates

Abbott, Edward M.	II	Vice-President and Agent, Abbott Worsted Co., Graniteville, Mass.
Baldwin, Frederick A.	II	Vice-President and Secretary-Treasurer, Walter Blue & Co., Ltd., Sherbrooke, P. Q., Canada.
Clapp, F. Austin	II	Salesman, Dunmore Worsted Co., Inc., New York City.
Clogston, Raymond B.	IV	Overseer of Dyeing, Merrimack Mfg. Co., Lowell, Mass.
Culver, Ralph F.	IV	First Vice-President and General Manager, Tate Electrolytic Waterproofing Co., New York City.
Cutler, Benjamin W., Jr.	III	With Anglo-American Cotton Products Co., New York City.
Dewey, James F.	II	Superintendent, Woolen Mills, A. G. Dewey Co., Quechee, Vt.
Donald, Albert E.	II	Assistant Superintendent, Uxbridge Worsted Co., Uxbridge, Mass.
Jury, Alfred E.	IV	Chemist, U. S. Rubber Co., New York City.
Lucey, Edmund A.	II	Industrial Engineer, H. L. Gantt, New York City.
MacPherson, Wallace A.	III	Designer, Waskanut Mills, Farnumsville, Mass.
Meadows, William R.	I	Assistant Instructor, Carding and Spinning, Clemson Agricultural College, Clemson College, S. C.
Stevens, Dexter	I	Superintendent, Esmond Mills, Esmond, R. I.
Webb, Frank H.	IV	Chemist, Washington Mills, Lawrence, Mass.
White, Royal P.	II	Agent, Stirling Mills, Lowell, Mass.

#### Certificate Holders

Halsell, Elam R.	I-V	
Horsfall, George G.	II-III-V	Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
Jones, Everett A.	III	Superintendent, Nye and Wait Carpet Co., Auburn, N. Y.
O'Donnell, John D.	I-V	Clerk, Travers Bros. Co., New York City.
O'Hara, William F.	IV	With Read, Holliday & Sons, Ltd., Boston, Mass.
Parker, Everett N.	I-III-V	Manufacturer, Parker Spool and Bobbin Company, Lewiston, Me.
Smith, Ralston F.	I	Sales Manager, The Corday and Gross Co., Cleveland, Ohio.



Name	Course	Occupation
Toovey, Sidney E.	V	Assistant Manager, S. S. Learnard Co., Boston, Mass.
Wilson, Walter E. H.	I-V	Deceased.

### Evening Course, 1904

#### Certificate Holders

Adams, Michael E.	VI	Sales Agent, Bay State Milling Co., Boston, Mass.
Balmforth, James H.	IIa-b	See Evening, 1903.
Balmforth, William F.	VI	East Orange, N. J.
Barker, John P.	V	
Barrington, John A.	IV	Assistant Manager, Kalle Color & Chemical Co., New York City.
Boucher, John L.	VI	
Butler, Benjamin O.	VI	
Callahan, Patrick A.	VI	With Lower Pacific Mills, Lawrence, Mass.
Cheetham, John Joseph	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Conley, Frederick A.	VI	Picker Expert, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Connors, Edward F.	VI	Draftsman, Locks and Canals, Lowell, Mass.
Davis, Prentice T.	Ia	Overseer, D. Mackintosh & Sons Co., Holyoke, Mass.
Delmage, Edward R.	IIIIa	With Globe Woolen Mills, Utica, N. Y.
Dempsey, John W.	IIa	Photographer, The Dempsey Studio, Ayer, Mass.
Donahue, Michael F.	VI	Foreman, Saco-Lowell Shops, Lowell, Mass.
Doole, George L.	VI	Clerk, U. S. Bunting Co., Lowell, Mass.
Dooley, Edward W.	VI	Sign Writer, The Kimball System, Lowell, Mass.
Duggan, Francis P.	VI	Overseer of Stores Dept., U. S. Cartridge Co., Lowell, Mass.
Frank, Emil M.	IIIIa	Loomfixer, Arlington Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIb	See Evening, 1899.
Hempel, Frank	V	Signal Dept., Boston & Maine Railroad, Lawrence, Mass.
Higgins, James A.	IIa-b	
Hoyle, Joseph	IIb	Overseer, U. S. Worsted Co., No. Chelmsford, Mass.
Jeannotte, Arthur	VI	Lowell, Mass.
Kershaw, William E.	V	Monotype Machinist, Courier-Citizen Co., Lowell, Mass.
Langevin, Felix D.	VI	Superintendent, Kitson Division, Saco-Lowell Shops, Lowell, Mass.
Lord, Harry D.	IIIIa	Selling Agent, Saco-Lowell Shops, Saco, Me.
Lord, Wilfred	IIa	See Evening, 1901.
McBride, Robert G.	IIa	
Merrill, Edwin C.	VI	Assistant Engineer, Eng. Dept., City Hall, Lawrence, Mass.

Name	Course	Occupation
Miller, Emil H.	V	Charge of Supply Dept., Lower Pacific Mills, Lawrence, Mass.
Moorehouse, Thomas	VI	Electrician, Arlington Mills, Lawrence, Mass.
Murphy, John H.	VI	Secretary, Board of Trade, Lowell, Mass.
Notman, Frederick W.	Ia	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Patrick, Alexander	IIIa	Omaha, Neb.
Redman, Henry S.	IIIa	Assistant Agent, Stark Mills, Manchester, N. H.
Reed, Foster C. K.	VI	Steam Engineer, Farwell Bleachery, Lawrence, Mass.
Rhodes, Joseph E.	V	Chicago, Ill.
Rooney, George W.	Ia	Superintendent, Cotton Yarn Mill, N. H. Spinning Mills Co., Penacook, N. H.
Shaw, James	V	Loomfixer, Lowell, Mass.
Smith, Edward	Ia	Overseer, Bourne Mills, Fall River, Mass.
Smith, John W.	IIb	Automobile Machinist, Peerless Motor Car Company of New England, Boston, Mass.
Sterling, Walter	IIIa	New Bedford, Mass.
Stokham, Burton I.	P. G. IV	See Evening, 1903.
Tarpey, John F.	IIa	With Merrimack Mfg. Co., Lowell, Mass.
Thompson, Charles B.	VI	Clerk, B. and M. Railroad, Lowell, Mass.
Webb, Francis H.	V	With H. R. Barker Co., Lowell, Mass.

### Day Course, 1905

Diploma	Graduates
I	See Evening, 1903.
I	Accountant, Harmony Mills, Boston, Mass.
I	With Alb. & E. Henkels, Bridgeport, Conn.
II	Superintendent, Industrial Dept., Mass. Commission for Adult Blind, Cambridge, Mass.
III	Landscape and Architectural Designer, Park and Recreation Dept., Boston, Mass.
I	President and General Manager, Harris Garage and Machine Co., Easthampton, Mass.
I	Examiner of Cottons, U. S. Appraisers Dept., New York City.
IV	Chemist, Arthur D. Little, Inc., Boston, Mass.
III	See Day, 1904.
IV	Chief of Textile Division, National Bureau of Standards, Washington, D. C.
IV	Chemist, United Indigo and Chemical Co., Ltd., Chicago, Ill.
IV	Salesman, I. Levinstein and Company, Boston, Mass.
I	Manager and Buyer, Chadbourne and Moore, Chelsea, Mass.

Name	Course	Occupation
Parker, Everett N.	I	See Day, 1904.
Thompson, Everett L.	I	Treasurer, The Direct Hosiery Co., Boston, Mass.
Warren, Philip H.	II	Superintendent, Hopeville Mfg. Co., Worcester, Mass.
Wheelock, Stanley H.	II	Superintendent, Stanley Woolen Company, Uxbridge, Mass.

#### Certificate Holders

Arundale, Henry B.	II-III-V	Director, Textile School, So. Manchester, Conn.
Conklin, Jennie G.	IIIb	Commercial Designer, Boston, Mass.
Curtis, William L.	II	With G. E. & H. F. Habich Co., Boston, Mass.
Hunt, Chester L.	III	
Lee, William H.	V	Treasurer, Lee's Wool Shop, Holyoke, Mass.
Roberson, Pat H.	I	Merchant, James R. Roberson and Son, Cropwell, Ala.
Roberts, Carrie I.	IIIb	Designer, Lowell, Mass.
Thomas, Roland V.	I	
Wright, Edward, Jr.	II	Assistant Engineer, Mass. State Board of Health, Boston, Mass.

#### Evening Course, 1905

##### Certificate Holders

Bake, Herbert	IIIa	Designer, Walworth Brothers, Lawrence, Mass.
Bastow, Henry	V	See Evening, 1903.
Bell, Frederick W.	IIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Bowie, Samuel A.	VI	Chief Engineer, Pacific Mills, Lawrence, Mass.
Brown, James P.	IIIa	Lowell, Mass.
Bryant, Ernest L.	VI	Clerk, C. A. Templeton, Inc., Waterbury, Conn.
Burke, Thomas F.	Ia	Lowell, Mass.
Burns, Edward J.	IV	Tester, U. S. Cartridge Company, Lowell, Mass.
Burns, James E.	IV	Overseer, Testing Dept., U. S. Cartridge Co., Lowell, Mass.
Caron, Cleophas	Ia	Overseer, Ring Spinning Dept., Queen City Cotton Co., Burlington, Vt.
Collins, John A.	IIa-b	Secretary, Mutual Boiler Insurance Company, Boston, Mass.
Cook, Cheney E.	IIIa	With Winslow Bros. and Smith Company, Boston, Mass.
Custer, James J. E.	V	Letter Carrier, Lowell, Mass.
Dana, Clarence A.	VI	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Dick, Hugo P.	IIIa	Designer, Merrimack Mfg. Co., Lowell, Mass.
Dimlick, Benjamin C.	IIIa	Deceased.

Name	Course	Occupation
Erbe, Gustave	VI	Foreman, J. L. Thomason Mfg. Company, Waltham, Mass.
Foster, Sherwood L.	Ia	Lowell, Mass.
French, Ernest J.	Ia	Farm Superintendent, Robert Barrett, Cornish, N. H.
Gay, Earle B.	Ia	
Goodchild, George	VI	See Evening, 1903.
Harder, Elmer E.	VI	Janitor, Highland School, Lowell, Mass.
Haven, George W.	IIIa	Of Blake and Stearns, Boston, Mass.
Howard, Thomas	V	Overseer, T. Martin and Bro. Mfg. Co., Lowell, Mass.
Hunt, Herbert R.	VI	
Hunton, Lewis G.	IV	Shipping Clerk, C. I. Hood Co., Lowell, Mass.
Kenworthy, Joseph	Ia	
Kimball, Irving D.	VI	With Saco-Lowell Shops, Lowell, Mass.
Lamson, George F.	VI	See Day, 1900
Linkletter, Alfred C.	VI	Farmer, Linkletter, P. E. I.
Lovell, Charles E.	VI	Los Angeles, Cal.
McManus, Hugh	V	
Maguire, James H.	VI	Efficiency Engineer, Saco-Lowell Shops, Lowell, Mass.
Martin, John C., Jr.	IIa-b	Died March 10, 1913.
Molloy, Andrew	IIIa	See Evening, 1902.
O'Neill, Peter F.	IV	Superintendent, Standard Processing Co., Chattanooga, Tenn.
Overend, John	V	
Redman, Henry S.	V	See Evening, 1904.
Silk, Frederick C. M.	IV	Color Passer and Pattern Starter, Bigelow-Hartford Carpet Co., Lowell, Mass.
Simola, Emil J.	IIa-b	Finland.
Skinner, Clarence W.	IIIa	With Brightwood Mfg. Co., No. Andover, Mass.
Smith, Arthur	IIIa	Designer, Pemberton Mills, Lawrence, Mass.
Smith, George A.	IIIa	Overseer, Ludlow Manufacturing Associates, Ludlow, Mass.
Smith, William E.	IIIa	Clerk, Kennedy & Co., Lawrence, Mass.
Stevens, Frank W.	VI	Assistant Engineer, Locks & Canals, Lowell, Mass.
Stopherd, William H.	IIIa	See Evening, 1899.
Tonge, John	IV	Providence, R. I.
Wilde, Thomas E.	IIa	Proprietor, Jeremiah Clark Machinery Co., Lowell, Mass.
Wiswall, Frank T.	V	Cost Clerk, Geo. E. Kunhardt's Mill, Lawrence, Mass.

## Day Course, 1906

### Diploma Graduates

Avery, Charles H.	II	Died January, 1913.
Bradford, Roy H.	II	Assistant Superintendent, Flax Mill, Smith and Dove Mfg. Company, Andover, Mass.

Name	Course	Occupation
Churchill, Charles W.	III	Vice-President and Treasurer, The Granby Elastic Web Co., Ltd., Granby, Quebec, Canada.
Cole, Edward E.	IV	Reporter, Bradstreet Co., Boston, Mass.
Currier, Herbert A.	I	Cotton Yarn Salesman, William Whitman & Co., Inc., New York City.
Curtis, Frank M.	I	Manager, Milton Branch, Wm. Curtis Sons Co., Milton, Mass.
Fleming, Frank E.	IV	Asst. Dyer and Finisher, Goodall Worsted Co., Sanford, Me.
Gahn, George L.	II	Superintendent, Wood Worsted Mills, Lawrence, Mass.
Hennigan, Arthur J.	II	New England Representative, Talbot Mills, Boston, Mass.
Swan, Guy C.	II	Chemist, C. S. Treasury Dept., Washington, D. C.
Varnum, Arthur C.	II	Superintendent, Stirling Mills, Lowell, Mass.
Wightman, William H.	IV	Salesman, The Bayer Co., Inc., Boston, Mass.
Wood, Herbert C.	I	Assistant Superintendent, Union Wadding Co., Pawtucket, R. I.

#### Certificate Holders

Church, Charles R.	II-V	Physical Director, Alhambra High School, Alhambra, Calif.
Gillon, Sara A.	IIIb	Designer, Lowell, Mass.
Hildreth, Harold W.	II-V	
Hintze, Thomas F.	I	Resident Engineer, The Texas Co., Providence, R. I.
Kent, Clarence L.	III-V	Retail Manager, Standard Oil Co., No. Andover, Mass.
Lane, John W.	I	
McDonnell, William H.	I-V	South Boston, Mass.
Newcomb, Guy H.	IV	Manager, Badische Co., San Francisco, Cal.
Reynolds, Isabel H.	P. G. III-V	See Day, 1903.
Stohn, Alexander C.	III-V	Assistant Superintendent, C. Stohn, Hyde Park, Mass.
Woodruff, Charles B.	V	Secretary, Sharp & Co., Inc., Birmingham, Ala.

#### Evening Course, 1906

##### Certificate Holders

Abbott, Paul W.	Ia	Chief Inspector, Cadillac Motor Car Co., Detroit, Mich.
Amiot, Louis H.	Va	With American Hide and Leather Co., Lowell, Mass.
Armstrong, Elias B.	IIb	With Hamilton Woolen Co., Boston, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Brouder, John J.	IIIa	Designer, Ayer Mills, Lawrence, Mass.
Brown, James P.	P. G. IIIa	See Evening, 1905.



Name	Course	Occupation
Brown, William G.	IIb	President, Geo. C. Moore Wool Scouring Mills and Brookside Worsted Mills, No. Chelmsford, Mass.
Burgess, Joseph H.	Va	Cloth Inspector, Arlington Mills, Lawrence, Mass.
Burnham, Joseph W.	IIIa	Designer, Lincoln Mills, Pascoag, R. I.
Burnham, Wilmont V.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Dick, Hugo P.	P. G. IIIa	See Evening, 1905.
Dickson, Andrew	IIa	Deceased.
Dimlick, Benjamin C.	P. G. IIIa	Overseer, Hamilton Mfg. Co., Lowell, Mass.
Dodge, Frank	Ia	Overseer, Weaving, Ayer Mills, Lawrence, Mass.
Duce, Benjamin	IIIa	Superintendent, A. D. Ellis & Sons, Monson, Mass.
Ellis, George W.	VII	Buckeye, Texas.
Eyers, John T.	IV	See Evening, 1904.
Frank, Emil M.	P. G. IIIa	Lowell Bleachery, Lowell, Mass.
Fulton, John M.	V	Foreman, American Optical Co., Southbridge, Mass.
Gregson, Robert B.	Va	
Haigh, William	Vb	
Hartwell, Henry E.	VI	Doctor, Lawrence, Mass.
Hoessler, Carl, Jr.	IIIa	Overseer, Weaving, M. T. Stevens & Son, No. Andover, Mass.
Howard, John	IIa	See Evening, 1900.
Hutton, Harold	V	
Hutton, John M.	Vb	
Inberg, Magnus	Ia	Finland.
Johnson, Ernest A.	V	See Evening, 1902.
Kidd, Thomas E.	IV	Second Hand, Dyehouse, Mayo Woolen Co., Millbury, Mass.
Laffert, August W.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
McCarthy, Joseph F.	IIIa	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
McLaughlin, Peter J.	Ia	Second Hand, Mass. Cotton Mills, Lowell, Mass.
McLay, John	Vb	Agent, Valley Worsted Mills, Providence, R. I.
Maguire, James H.	Ia	See Evening, 1905.
Micheltmore, Harry	IIIa	Asst. Designer, Brightwood Mfg. Co., No. Andover, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Morton, Albert N.	IIb	Salesman, Morton & Andrews, Lowell, Mass.
Murphy, Cornelius D.	IIa	Proprietor, Murphy's Supply House, Savannah, Ga.
Nelson, Ernest H.	IIIa	See Evening, 1900.
O'Brien, David A.	IV	
Pedler, William A.	Ia	Superintendent, Cotton Department, Arlington Mills, Lawrence, Mass.
Pihl, Christian E.	VI	Master Mechanic, Appleton Mills, Lowell, Mass.

Name	Course	Occupation
Pittendreigh, John M.	Ia	Erector, Saco-Lowell Shops, Charlotte, N. C.
Reardon, Timothy H.	VI	Instructor, Industrial School, Lowell, Mass.
Reynolds, Eugene A.	VI	With Lawrence Mfg. Co., Lowell, Mass.
Richards, Francis G.	IIa	North Andover, Mass.
Rushworth, Walter	VI	Electrician, Girard Bros., Boston, Mass.
Schubert, George J.	V	Second Hand, Pemberton Co., Lawrence, Mass.
Senior, George	Va	Seattle, Wash.
Sharpe, John R.	VI	Overseer, Saco-Lowell Shops, Lowell, Mass.
Sheppard, Byron H.	VI	Architect and Engineer, Providence, R. I.
Silk, Patrick E.	VII	
Skinner, Clarence W.	P. G. IIIa	See Evening, 1905.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
	Va	
Smith, George A.	P. G. IIIa	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Vogt, Harry A.	P. G. Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Walker, William, Jr.	VII	Superintendent, Ottaqueeche Woolen Co., No. Hartland, Vt.
Ward, James J.	VII	Pressman, Lowell Fertilizer Co., Lowell, Mass.
Whitcomb, Harry E.	Ia	Deceased.

### Day Course, 1907

#### Diploma Graduates

Arundale, Henry B.	II	See Day, 1905.
Coman, James G.	I	Superintendent and Buyer, Tipton Cotton Mills, Covington, Tenn.
Craig, Albert W.	IV	In Laboratory, Pacific Mills, Lawrence, Mass.
Farmer, Chester J.	IV	Professor of Physiological Chemistry, Marquette Medical School, Milwaukee, Wis.
Haskell, Spencer H.	II	Worcester, Mass.
Hathorn, George W.	IV	Chemist, Lawrence Gas Co., Lawrence, Mass.
Hildreth, Harold W.	II	See Day, 1906.
Hoyt, Charles W. H.	IV	
Knowland, Daniel P.	IV	Chemist, Geigy-ter-Meer, New York City.
Mackay, Stewart	III	Instructor, Textile Design and Cloth Analysis, Lowell Textile School, Lowell, Mass.
Merriman, Earl C.	II	With Samson Cordage Works, Shirley, Mass.
Raymond, Charles A.	IV	Assistant to Superintendent, N. E. Gas and Coke Company, Everett, Mass.
Storer, Francis E.	II	Cashier, Windham County National Bank, Danielson, Conn.
Stursberg, Paul W.	II	Died 1913.

Name	Course	Occupation
Woodcock, Eugene C.	II	Manufacturing Superintendent, Chelsea Fibre Mills, Brooklyn, N. Y.

#### Certificate Holders

Brannan, Leon V.	III-V	Philadelphia, Pa.
Ehrenfried, Jacob B.	II-V	With George Ehrenfried Co., Lewiston, Me.
Lane, John W.	I-V	See Day, 1906.
Parker, Mrs. Herbert L. (Meek, Lotta L.)	IIb	474 Main St., Lewiston, Me.

#### Evening Course, 1907

##### Certificate Holders

Ackroyd, Theodore C.	IIb	Arlington Mills, Lawrence, Mass.
Bain, William A.	VII	Color Chemist, C. Bischoff & Co., New York City.
Bake, Herbert	VII	See Evening, 1905.
Ballinger, Frederick W.	IIb	Second Hand, Silesia Worsted Mills, No. Chelmsford, Mass.
Barber, James E.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Barraclough, John C.	Ia	With Arlington Mills, Lawrence, Mass.
Bastow, Stephen W.	IV	Superintendent, Dyeing and Bleaching, Nashua Mfg. Co., Nashua, N. H.
Bayard, Pierre P.	IIIa	Adjutant, 351 Regiment d'Infanterie, France.
Begen, Thomas W.	IIb	Overseer, Washington Mills, Lawrence, Mass.
Benoit, William A.	Va	Second Hand, Everett Mills, Lawrence, Mass.
Bouille, Arthur L.	Vb	Loomfixer, Washington Mills, Lawrence, Mass.
Brannen, Leon V.	IIa	See Day, 1907.
Brouder, John J.	VII	See Evening, 1906.
Bucklitsch, Gustave J.	IIb	Overseer of Combing, Washington Mills, Lawrence, Mass.
Burgess, Joseph H.	Vb	See Evening, 1906.
Butterworth, Charles A.	Va	Agent's Clerk, Butler Mill, New Bedford, Mass.
Butterworth, John A.	IIb	With J. W. Coggeshall, Providence, R. I.
Carden, Francis E.	IIb	Deceased.
Carlson, Ernest B.	IIb	West Chelmsford, Mass.
Dick, Hugo P.	IIb	See Evening, 1905.
Dobbs, William	IIb	Second Hand, Mass. Mohair Plush Co., Lowell, Mass.
Dodge, Charles P.	IIa	Machinist, C. S. Dodge, Lowell, Mass.
Duce, Benjamin	VII	See Evening, 1906.
Flint, Leon G.	IIIa	Finished Percher, Washington Mills, Lawrence, Mass.
Frechette, Alphonse J.	IIb	Clerk, W. Gendron, Lawrence, Mass.
Gillespie, James E.	VII	With Ayer Mills, Lawrence, Mass.
Gregson, Robert B.	Ia-Vc	See Evening, 1906.

Name	Course	Occupation
Haartz, John C.	VII	President and Treasurer, J. C. Haartz, Inc., Boston, Mass.
Haas, Ignatius	Ia	
Hamblett, Harry A.	Ia	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hanglin, Albert J.	IV	
Hanglin, William E.	Vb	Chicago, Ill.
Hebert, Charles L. J.	IV	Grocer, Lowell, Mass.
Hitchen, Harry S.	Vb	
Hitchen, Thomas G.	Vb	
Howard, John	VII	See Evening, 1900.
Ignatius, Pentti	Va	Finland.
Jepson, Harry	Vb	With U. S. Bunting Co., Lowell, Mass.
Kelly, Michael H.	IIIa	See Evening, 1902.
Kirsch, Alfred O.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Laffert, August W.	VII	See Evening, 1906.
Lake, William F.	IIIa	Overseer, Middlesex Co., Lowell, Mass.
Marjerison, T. Sydney	IIIa	Poultry Farmer, Salem, N. H.
Martin, Willard E.	IIIa	Wholesale Small Wares, Somerville, Mass.
Michelmores, Harry	VII	See Evening, 1906.
Myers, James W.	VII	See Evening, 1903.
Nelson, Charles E.	IIb	With Sugden Press Bagging Co., No. Chelmsford, Mass.
O'Brien, Michael F.	IIb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Porter, George K., Jr.	IIIa	Salesman, Wellington, Sears & Co., San Francisco, Calif.
Read, Paul A.	VII	Superintendent, Seaconnet Mills, Fall River, Mass.
Redman, Henry S.	Ia	See Evening, 1904.
Ritter, Alfred E.	IIb	Died December 12, 1913.
Robbins, John	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Senior, George	Ia-Vc	See Evening, 1906.
Skinner, Clarence W.	VII	See Evening, 1905.
Smith, Arthur	Vc	See Evening, 1905.
Smith, Ernest B.	Vb	East Side Mill & Lumber Co., Selwood, Portland, Oreg.
Smith, James	Vb	Loom Fixer, Wood Worsted Mills, Lawrence, Mass.
Smith, Percy H.	Vb	Washington Mills, Lawrence, Mass.
Smith, William E.	VII	See Evening, 1905.
Varnum, Arthur C.	Vb	See Day, 1906.
Wahlberg, Einar S.	Ia	Fitchburg, Mass.
Waterworth, Frank W.	Vb	Overseer, Ayer Mill, Lawrence, Mass.
Webb, Francis H.	IIIa	See Evening 1904.
Webber, John F.	IIIa	
Whittaker, Thomas B.	IIb	Bookkeeper, Quidnick-Windham Mfg. Co., Providence, R. I.
Wiggin, Leon M.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Wolf, William C.	Va	Loomfixer, Pacific Mills, Lawrence, Mass.
Wolger, John J.	IIIa	Lawrence, Mass.
Yare, John F.	Vb	

## Day Course, 1908

Name	Diploma Course	Graduates Occupation
Abbott, George R.	II	Andover, Mass.
Ballard, Horace W. C. S.	IV	Chemist and Overseer of Dyeing, Felters Co., Millbury, Mass.
Dwight, John F., Jr.	II	Holliston, Mass.
Farr, Leonard S.	II	Overseer, Farr Alpaca Co., Holyoke, Mass.
Gay, Olin D.	II	Superintendent, Gay Bros. Co., Caven-dish, Vt.
Hadley, Walter E.	IV	Research Textile Chemist, Roessler & Hasslacher Chemical Co., Perth Am-N. J.
Huising, Geronimo H.	I	Farmer, San Jose Estate and Mindoro Co., San Jose, Mindoro, P. I.
Jenckes, Leland A.	VI	Deceased.
Lewis, LeRoy C.	IV	Superintendent, U. S. Conditioning and Testing Co., Paterson, N. J.
Mailey, Howard T.	II	Assistant Superintendent, Lower Pacific Mills, Lawrence, Mass.
Perkins, J. Dean	III	Overseer, Worsted Dressing, Amoskeag Mfg. Co., Manchester, N. H.
Prince, Sylvanus C.	VI	
Proctor, Braman	IV	Dyestuff Salesman, Badische Co., Boston, Mass.
Reynolds, Fred B.	II	Purchasing Agent, M. T. Stevens and Sons Co., No. Andover, Mass.
Robinson, Ernest W.	IV	Superintendent, Belding Bros. & Co., Rockville, Conn.
Weinz, W. Elliot	IV	With F. T. Fuller Co., Boston, Mass.
Wingate, William H.	IV	Chemist, Sidney Blumenthal and Co., Shelton, Conn.

## Evening Course, 1908

	Certificate Holders	
Arnold, Warren H.	VII	Overseer, Lymansville Co., Lymansville, R. I.
Barrington, James L.	IV	Dyestuff Salesman, Kalle Color and Chemical Co., Boston, Mass.
Begen, Thomas W.	IIb	See Evening, 1907.
Berry, Alfred H.	VI	Electrical Engineer, Silesia Worsted Mills, No. Chelmsford, Mass.
Broadbent, James H.	Vb	With U. S. Bunting Co., Lowell, Mass.
Broadbent, William	Vb	
Brown, James T.	IIIa	Section Hand, Wood Worsted Mills, Law-rence, Mass.
Buckley, Harry	IV	Overseer, Warp Dyeing, Arlington Mills, Lawrence, Mass.
Campbell, Archibald	IV	In charge of Department, United Drug Laboratories Co., Boston, Mass.
Carden, Francis E.	IIb	Deceased.
Carney, William J.	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Carter, Charles R.	Vb	Sexton, Grace Church, Lawrence, Mass.



Name	Course	Occupation
Corr, Eben W.	Vb	
Corr, James F.	Vb	Loomfixer, Bay State Mills, Lowell, Mass.
Craven, Harry	VII	Clerk, Pacific Mills, Lawrence, Mass.
Dick, Hugo P.	Vb	See Evening, 1905.
Dixon, Arthur	IIIa	Loomfixer, American Woolen Co., Lawrence, Mass.
Dobbs, William	IIb	See Evening, 1907.
Dunn, George C.	IIIa	Lowell, Mass.
Flynn, William J.	Vb	Lowell, Mass.
Greenhalge, James	Vc	Overseer, Jackson Mfg. Co., Nashua, N. H.
Hallbauer, William R.	Vb	Lawrence, Mass.
Hanson, Edward	IIIa	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hardman, David B.	IV	Machine Printer, Pacific Mills, Lawrence, Mass.
Harris, Louis	VII	Clothing Designer, J. Peavy and Bros., Boston, Mass.
Hennessey, Ambrose M.	VII	Inspector of Transformers, General Electric Co., Pittsfield, Mass.
Hill, Harold	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Hoellrich, Martin J.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Ingham, Benjamin W.	Ia	Overseer, Boott Mills, Lowell, Mass.
Lagerbald, Jarl	VII	Finland.
Lake, William F.	P. G. IIIa	See Evening, 1907.
McGill, William E.	VII	Second Hand, Linn Woolen Co., Hartland, Me.
McGovern, James	VII	Died April 24, 1911.
McKenna, Jerimiah J.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Maker, Isaac A.	Ia	Draftsman, Lawrence Mfg. Co., Lowell, Mass.
Marjerison, T. Sydney	P. G. IIIa	See Evening, 1907.
Marshall, Fred K. R.	VI	Electrician, Arlington Mills, Lawrence, Mass.
Mortenson, Carl W.	IIa	Died 1914.
Nutter, James R.	VI	With Merrimack Mfg. Co., Lowell, Mass.
Osbeck, William J.	IIIa	Deceased.
Patterson, Alfred H.	IIIa	Clerk, Lower Pacific Mills, Lawrence, Mass.
Perkins, Thomas, Jr.	Ia	Superintendent, Sanford Mills, Reading, Mass.
Picken, William T.	IIIa	Purchasing Agent and Paymaster, Silesia Worsted Mills, No. Chelmsford, Mass.
Plumer, Paul T.	Vb	Cloth Inspector, U. S. Bunting Co., Lowell, Mass.
Porter, George K., Jr.	P. G. IIIa	See Evening, 1907.
Preble, George A.	IIIa	Designer, Massachusetts Cotton Mills, Lowell, Mass.
Saalfank, Joseph C.	IIIa	With Arlington Mills, Lawrence, Mass.
Sally, Edward	VI	Baker, Worcester, Mass.
Schermerhorn, George E.	Va	See Evening, 1902.
Schuster, William F.	VII	Second Hand, Washington Mills, Lawrence, Mass.

Name	Course	Occupation
Seddon, N. Graham	IIIa	Manager, Commonwealth Mfg. Co., Brooklyn, N. Y.
Semple, Alexander	IIIa	Lowell, Mass.
Shackleton, J. Henry	IV	Overseer, Dyeing, Pemberton Mills, Lawrence, Mass.
Simoneau, Verner W.	VI	Machinist, U. S. Cartridge Co., Lowell, Mass.
Spurr, Albert R.	VII	Finisher, Atlantic Mills, Providence, R. I.
Spurr, James H., Jr.	IV	Bacteriologist, State Board of Health Experimental Station, Lawrence, Mass.
Stewart, Charles	Va	
Teichmann, Alfred A.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Tucker, John T.	Ia	Clerk, Saco-Lowell Shops, Lowell, Mass.
Varnum, Arthur C.	P. G. IIIa	See Day, 1906.
Webber, John F.	P. G. IIIa	
Whittaker, Thomas B.	IIb	See Evening, 1907.
Wiggin, Leon M.	P. G. IIIa	See Evening, 1907.
Willgeroth, Henry J.	IIIa	Asst. Designer, Wood Worsted Mills, Lawrence, Mass.
Wilmot, Joseph	IIIa	Instructor, Weaving Dept., Lowell Textile School, Lowell, Mass.
Wolf, William C.	Vb	See Evening, 1907.
Wood, Jonathan	Va	See Evening, 1902.
Young, Richard, Jr.	Va	Lowell, Mass.

#### Day Course, 1909

##### Diploma Graduates

Brainerd, Arthur T.	IV	Salesman, Farbwerke Hoechat Co., Chicago, Ill.
Conant, Harold W.	I	Assistant Manager, Conant, Houghton & Co., Littleton, Mass.
Fairbanks, Almonte H.	II	Treasurer, Middlesex Knitting Co., Reading, Mass.
Ferguson, William G.	III	Yarn Inspector, Ludlow Mfg. Associates, Ludlow, Mass.
Fiske, Starr H.	II	Designer, D. Goff & Son, Pawtucket, R. I.
Gyzander, Arne K.	IV	Chemist, Cassella Color Co., Boston, Mass.
Holden, Francis C.	IV	Chemist and Dyer, Chelsea Fibre Mills, Brooklyn, N. Y.
Kay, Harry P.	II	With Richard L. Wallace & Co., Philadelphia, Pa.
Laughlin, James K.	III	Providence, R. I.
Levi, Alfred S.	IV	Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
Mason, Archibald L.	VI	Billerica, Mass.
Mullen, Arthur T.	II	Designer, Sutton's Mills, No. Andover, Mass.
Newall, J. Douglas	IV	Manager, Easton Finishing Co., Easton, Pa.
Parkis, William L.	I	Efficiency Man, Cheney Bros., So. Manchester, Conn.
Pease, Chester C.	I	Superintendent, Yarn Mill, Shaw Stocking Co., Lowell, Mass.

Name	Course	Occupation
Potter, Carl H.	I	Efficiency Engineer, Amoskeag Mfg. Co., Manchester, N. H.
Prescott, Walker F.	IV	Assistant Superintendent, Bates & Innes, Carleton Place, Ont., Canada.
Saunders, Harold F.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Stone, Ira A.	IV	Buyer, Royal Waste Co., Boston, Mass.
Wood, J. Carleton	IV	Textile Expert, Republic Rubber Co., Youngstown, Ohio.

### Evening Course, 1909

#### Certificate Holders

Anderson, Carl A.	IV	Machinist, Lenot Motor Co., Boston, Mass.
Arnold, Warren H.	IIIa	See Evening, 1908.
Bailey, Rothwell	Va	With Mass. Cotton Mills, Lowell, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Banks, Jonas	Va	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Barr, Mrs. John E. (Butler, Elizabeth M.)	IIIb	Lowell, Mass.
Benoit, Benjamin L.	VIb	Bookkeeper, Bay State Mills, Lowell, Mass.
Booth, Arthur	IIIa	Overseer, Bates Mfg. Co., Lewiston, Me.
Bowen, Herbert E.	IIIa	Overseer, Ipswich Mills, Lowell, Mass.
Buckley, Richard A.	Vb	With U. S. Bunting Co., Lowell, Mass.
Bunce, Raymond H.	Vb	Salesman, American Woolen Co., New York, N. Y.
Carman, William	Va	Fixer, Tremont and Suffolk Mills, Lowell, Mass.
Chesworth, Frank K.	Va	With Everett Mills, Lawrence, Mass.
Cockell, Frederick H.	IIIa	Superintendent, College Poultry Farm, Mass. Agricultural College, Amherst, Mass.
Cowdrey, Charles E.	Vb	See Evening, 1902.
Davison, Frank L.	Vb	Loomfixer, Talbot Mills, No. Billerica, Mass.
Dulligan, Charles E.	VIa	Overseer, U. S. Cartridge Co., Lowell, Mass.
Dunning, Carlos W.	VIb	Second Hand, Appleton Co., Lowell, Mass.
Gaunt, Ernest H.	IIIa	Editor and Mercantile Statistician, Babson's Statistical Organization, Wellesley Hills, Mass.
Gilinson, Philip J.	VIa	Experimental Work, Heinze Electric Co., Lowell, Mass.
Gordon, Herbert E.	IIIa	Clerk, Arlington Mills, Lawrence, Mass.
Hanson, Edward	P. G. IIIa	See Evening, 1908.
Hayes, Michael C.	IIa	In business, No. Billerica, Mass.
Hill, Harold	Va	See Evening, 1908.
Hillier, Arthur P.	IIb	Night Superintendent, Silesia Worsted Mills, No. Chelmsford, Mass.
Hodgkins, Albert A.	VII	Superintendent of Narrow Fabric, A. & E. H. Henkels, Bridgeport, Conn.
Holt, Harry C.	VIa	

Name	Course	Occupation
Houston, William I.	IIIa	
Howell, Edward A.	Va	Loomfixer, Pemberton Mills, Lawrence, Mass.
Joyce, John	Vc	
Kaler, Harold F.	VIIb	Foreman, General Electric Co., Lynn, Mass.
Kelley, Bernard J., Jr.	VIIc	With B. Joseph Kelley, New York City.
Kershaw, Benn	Va	Overseer, Boott Mills, Lowell, Mass.
Lincourt, Henry E.	VIIb	With Stover & Bean, Lowell, Mass.
McClure, Charles G.	VIIb	With Heinze Electric Co., Lowell, Mass.
McLay, John	IIb	See Evening, 1906.
Madden, Peter	Va	In Business, Lowell, Mass.
Mahoney, Dennis J.	Vb	Assistant Postmaster, No. Billerica, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Musard, Albert E., Jr.	Vc	Assistant Foreman, Remington Arms, Bridgeport, Conn.
Nelson, Ernest H.	Ia	See Evening, 1900.
Orrell, Frank L.	VIIb	Second Hand, Mass. Mohair Plush Co., Lowell, Mass.
Palmer, G. Buel	Vb	See Evening, 1903.
Paquin, Joseph	VIIa	Machinist, U. S. Government, Schofield Barracks, N. H.
Parsons, Joseph G.	IIIa	Pattern Weaver, Thos. Kitson & Son, Stroudsburg, Pa.
Pearson, Fred	VIIa	Machinist, Saco-Lowell Shops, Lowell, Mass.
Read, Paul A.	Va	See Evening, 1907.
Robinson, Thomas	Ia	Fitchburg, Mass.
Ryan, Edward P.	Ia	Lowell, Mass.
Schubert, George J.	IIIa	See Evening, 1906.
Schuerfeld, Harry W.	IIIa	Salesman, Sparrow-Chisholm & Co., Boston, Mass.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
Smith, George A.	VII	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stocks, Carl W.	VIIa	Statistician, American Electric Railway Assn., New York City.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Sullivan, Humphrey F.	Ia	Deceased.
Sykes, Alvin E.	VIIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Tucker, John T.	Va	See Evening, 1908.
Varnum, Arthur C.	VII	See Day, 1906.
Vogt, Alfred H.	IIb	See Evening, 1902.
Walsh, Michael L.	Ia	Lowell, Mass.
Ware, Edward W.	IIIa	With Wellington, Sears & Co., Boston, Mass.
Watson, Luther F.	IIb	Clerk, Arlington Mills, Lawrence, Mass.
Weigel, Frederick A.	VIIb	Machinist, Pacific Mills, Lawrence, Mass.
Young, Richard, Jr.	Vc	See Evening, 1908.

### Day Course, 1910

#### Diploma Graduates

Arienti, Peter J.	IV	Chemist and Dyer, James & E. H. Wilson Mfg. Co., Pittsfield, Mass.
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Name	Course	Occupation
Cary, Julian C.	VI	Assistant Resident Manager, American Mutual Liability Insurance Co., Hartford, Conn.
Clark, Thomas T.	II	Treasurer, Talbot Mills, No. Billerica, Mass.
Duval, Joseph E.	II	With F. Nathaniel Perkins, Boston, Mass.
Finlay, Harry F.	IV	Chemist, American Dyewood Co., New York City.
Fletcher, Roland H.	VI	Engineering Department, Osgood Bradley Car Co., Worcester, Mass.
Gale, Harry L.	III	Manager, Fancy Goods Dept., Wilmerding & Bissett, New York City.
Goldberg, George	VI	Draftsman, B. F. Sturtevant Co., Hyde Park, Mass.
Hardy, Philip L.	VI	General Contractor and Builder, Andover, Mass.
Howe, Woodbury K.	I	With International Cotton Mills, Manchester, N. H.
Hurtado, Leopoldo, Jr.	VI	General Manager, Hurtado and Co., Uruapan, Mich., Mexico.
Jelleme, William O.	I	Head of Test Department, Brighton Mills, Passaic, N. J.
Keough, Wesley L.	II	Paymaster, Massachusetts Mohair Plush Co., Lowell, Mass.
Lamb, Arthur F.	II	Manager, Rockland Cleaning & Dyeing Co., Rockland, Me.
McCool, Frank L.	IV	Dyer, Merrimack Mfg. Co., Lowell, Mass.
Manning, Frederick D.	IV	Investigator, Cheney Bros., So. Manchester, Conn.
Murray, James A.	II	With Talbot Clothing Co., Boston, Mass.
Nichols, Raymond E.	VI	Cost Accountant, Lowell Bleachery, Lowell, Mass.
Putnam, Leverett N.	IV	Dyer, Franklin Mills, Franklin, Mass.
Reed, Norman B.	I	Textile Cost Accountant and Industrial Engineer, Boott Mills, Lowell, Mass.
Robson, Frederick W. C.	IV	
Smith, Doane W.	II	Efficiency Dept., Ludlow Manufacturing Associates, Ludlow, Mass.
Smith, Theophilus G., Jr.	IV	Groton, Mass.
Stronach, Irving N.	IV	Dyer and Finisher, Aberfoyle Mfg. Co., Chester, Pa.
Whitcomb, Roscoe M.	IV	Druggist, Hinsdale Drug Co., Hinsdale, Mass.

### Evening Course, 1910

#### Certificate Holders

Anderton, Harry	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Atkinson, Norman	Vb	Of Whitham & Atkinson, Lawrence, Mass.
Bailey, Carl E.	Ia	Superintendent, Franklin Mills Corp., Franklin, Mass.
Banks, Jonas	Vc	See Evening, 1909.
Berry, Percy W.	Vb	With Walbuck Crayon Co., Lawrence, Mass.



Name	Course	Occupation
Bourchard, Ethan J.	Vc	Lockport, N. Y.
Bourchard, Robert R.	Vb	Photographer, Indianapolis, Ind.
Burgess, Joseph H.	IIIa	See Evening, 1906.
Campbell, Edward G.	VIc	In Real Estate Business, Lowell, Mass.
Christison, Hugh	IV	Chemist's Assistant, Arlington Mills, Lawrence, Mass.
Cox, Edward J.	IIIa	Cost Finder, Merrimack Mfg. Co., Lowell, Mass.
Cutress, Albert J.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Deely, John A.	Vb	Pittsfield, Mass.
Duckett, Fred I.	Vb	Lawrence, Mass.
Dulligan, Lawrence F.	VIa	Machinist, Vulcan Iron Works, Seattle, Wash.
Dunn, George C.	IVa	See Evening, 1908.
Eklund, Louis V.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Fielding, Fred	Vc	With Merrimack Mfg. Co., Lowell, Mass.
Flemings, Lester A.	Va	Assistant Superintendent, Bay State Mills, Lowell, Mass.
Flynn, John	VIId	Toolmaker, Kitson Plant, Saco-Lowell Shops, Lowell, Mass.
Flynn, Patrick	Vb	Deceased.
Fujiyoshi, Heisayu	Ia	Died April 19, 1915.
Gaspar, Edith E.	IIIb	Clerk, Lawrence Hosiery, Lowell, Mass.
Gauthier, William	Vb	With U. S. Bunting Co., Lowell, Mass.
Murphy, Mrs. (Gookin, Alice L.)	IIIb	Washington, D. C.
Hering, Paul C.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Hibbert, George E.	Va	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Hill, Ellsworth O. C.	IIb	Assistant Superintendent, Yarn Dept., Wood Worsted Mills, Lawrence, Mass.
Hilliard, William B.	VIa	Foreman, American Watch Tool Co., Waltham, Mass.
Hird, Arthur W.	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.
Hird, James A.	IVa	Chemist, B. & M. and N. Y., N. H. & H. R. R., Boston, Mass.
Hodgkins, Albert A.	IIIa	See Evening, 1909.
Hoellrich, Martin J.	Vc	See Evening, 1908.
Holt, Gavin O.	IVa	Lorraine Mfg. Co., Pawtucket, R. I.
Houston, William I.	Vb	
Hunton, John H.	VII	Treasurer, Newichawanick Co., So. Berwick, Me.
Hurtado, Leopoldo, Jr.	Vc	See Day, 1910.
Hutton, Thomas V.	Vb	Fireman, Fore River Shipbuilding Co., Quincy, Mass.
Jackson, Frank	VIb	With Copper Queen Consolidated Mining Co., Bisbee, Ariz.
Jean, Adhemard C.	VIa	Inspector, Line Dept., Bay State Street Railway Co., Lowell, Mass.
Jordan, Frederic W.	IV	Surveyor, Smith and Brooks, Lowell, Mass.

Name	Course	Occupation
Jorde, Linville T.	VIc	Cable Splicing, N. E. Tel. & Tel. Co., Dover, N. H.
Kershaw, Benn	Vc	See Evening, 1909.
Kershaw, Samuel S.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Krause, George	VII	Assistant Finisher, Arlington Mills, Law- rence, Mass.
LaJeunesse, Joseph A.	IVa	With Gingras & Corbett, Montreal, Canada.
Leck, Arthur J.	VII	Analyzer of Fabrics, Earl & Wilson, Troy, N. Y.
Ledoux, Blanche H.	IIIb	Clerk, A. G. Pollard Co., Lowell, Mass.
Lemire, Arthur	Ia	Overseer, Renfrew Mfg. Co., Adams. Mass.
McAuliffe, Patrick D.	VIb	Glazier, Lowell, Mass.
McElroy, Samuel H.	Vb	With Heinze Electric Co., Lowell, Mass.
Mabbett, Albert L.	IIIa	Superintendent and Designer, Newport Woolen Co., Newport, Me.
Maxcy, Leo M.	VIc	Foreman, F. E. Jewett and Co., Lowell, Mass.
Messiah, Hiram G.	Vb	
Nelson, Ernest H.	Vc	See Evening, 1900.
Nelson, Gustave A.	Vb	With T. Martin and Bro., Lowell, Mass.
Nichols, Clarence W.	Vb	With Alfred Kimball Shoe Co., Lawrence, Mass.
Nicoll, John	IVa	Overseer, Smith and Dove Mfg. Co., An- dover, Mass.
Paquin, Joseph	VIb	See Evening, 1909.
Petterson, Birger	VIa	Master Mechanic, Lowell Bleachery, Low- ell, Mass.
Phelps, Mary I.	IIIb	Teacher, City of Lowell, Lowell, Mass.
Redman, Henry S.	IV	See Evening, 1904.
Robinson, Thomas	Vc	See Evening, 1909.
Root, Francis X.	IIIa	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Shackleton, John H.	Ia	See Evening, 1908.
Stewart, William W.	IV	Overseer of Dyeing, Esmond Mills, Es- mond, R. I.
Stopherd, William H.	VII	See Evening, 1899.
Stott, Bertram S.	Vb	Loomfixer, Geo. E. Kunhardt, Lawrence, Mass.
Stott, Samuel	IV	Dyer, Arlington Mills, Lawrence, Mass.
Sullivan, Michael F.	VIb	With Merrimack Woolen Co., Dracut, Mass.
Todd, Henry	VII	With Lawrence Gas Co., Lawrence, Mass.
Welch, Benjamin L.	VIb	Installer, N. E. Tel & Tel. Co., Eastern Mass. Division, East Lynn, Mass.
Whitman, William P.	IVa	Second Hand, Farwell Bleachery, Law- rence, Mass.
Whitney, Frederick A.	IV	Dyer, John S. Boyd Co., Williamstown, Mass.
Williams, Allen R.	Ia	Clerk, Amoskeag Mfg. Co., New York City.
Worthington, John A.	Ia	Of Angus & Worthington, Burlington, Vt.

## Day Course, 1911

Diploma Graduates		
Name	Course	Occupation
Adams, Tracy A.	IV	Second Hand, Fancy Dyeing, Pacific Mills, Lawrence, Mass.
Bailey, Walter J.	IV	Manager, Bailey's Cleansers and Dyers, Inc., Watertown, Mass.
Blaikie, Howard M.	II	Assistant to Styler and Salesman, American Woolen Co., New York City.
Cameron, Elliott F.	IV	With New England Equitable Insurance Co., Boston, Mass.
Chandler, Proctor R.	IV	Chemist, Loose-Wiles Biscuit Co., New York City.
Chisholm, Lester B.	I	Efficiency Manager, Everlastik, Inc., Boston, Mass.
Dewey, Maurice W.	II	Of Peck Brothers Co., Montpelier, Vt.
Flynn, Thomas P.	IV	Assistant Dyer, Middlesex Bleach, Dye & Print Works, Somerville, Mass.
Ford, Edgar R.	IV	Finisher, Saylesville Bleachery, Saylesville, R. I.
Gainey, Francis W.	IV	Chemist, Dominion Textile Co., Magog, Quebec, Canada.
Hay, Ernest C.	II	With Monomac Spinning Co., Lawrence, Mass.
Hendrickson, Walter A.	II	Superintendent and Secretary, Middlesex Knitting Co., Reading, Mass.
Hubbard, Ralph K.	IV	With Squam Lake Woolen Co., Ashland, N. H.
Hunton, John H.	II	See Evening, 1910.
Martin, Harry W.	IV	Chemist, Hood Rubber Co., Watertown, Mass.
Merrill, Allan B.	IV	Chemist, B. F. Goodrich Co., Akron, Ohio.
Moore, Karl R.	IV	Chemist, Atlantic Mills, New York Mills, Standard Silk Co., Providence, R. I.
O'Connell, Clarence E.	IV	Second Hand in Dyehouse, Boston Mfg. Co., Waltham, Mass.
Pearson, Alfred H.	IV	Second Hand, Dyehouse, Goodall Worsted Co., Sanford, Me.
Rich, Everett B.	III	Hotel Manager, C. H. Greenleaf Co., Boston, Mass.
Sidebottom, Leon W.	IV	Second Hand, Dyehouse, Appleton Co., Lowell, Mass.
Standish, John C.	IV	Assistant Superintendent, F. C. Huyck and Sons, Albany, N. Y.
Toshach, Reginald A.	II	Assistant Designer, M. T. Stevens and Sons Co., Haverhill, Mass.
Walker, Alfred S.	II	With Essex Mills, Pictou, N. J.
Watson, William	III	With F. E. Watson, Haverhill, Mass.
Wood, Ernest H.	IV	Assistant Instructor, Department of Biological Chemistry, Marquette University School of Medicine, Milwaukee, Wis.

# Evening Course, 1911

Name	Certificate Holders	Occupation
Andrews, Oliver	Ia-Va	Salesman, Wellington, Sears & Co., New York City.
Ballinger, William E.	IIb	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Barnes, Joseph	Ia	Second Hand, Smith and Dove Mfg. Co., Andover, Mass.
Bastow, Percy	IVa	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Birkby, Charles H.	IVa	Overseer of Dyeing, J. & J. Dobson, Philadelphia, Pa.
Brown, William F.	VIb	Master Mechanic, U. S. Worsted Co., Lowell, Mass.
Burke, James F.	Vc	U. S. Navy.
Carpilio, John A.	VIa	With Alfred Kimball Shoe Co., So. Lawrence, Mass.
Carty, Thomas P.	Vb	Lowell, Mass.
Christison, Hugh	IVd	See Evening, 1910.
Cochrane, John	VIb	Electrician, Lowell Gas Light Co., Lowell, Mass.
Cote, George W.	VIb	With Shaw Stocking Co., Lowell, Mass.
Cox, Edward J.	Va	See Evening, 1910.
Dean, Hubert R.	VIb	Assistant Engineer, John A. Stevens, Eng., Lowell, Mass.
Delaney, Michael J.	Vb	Fixer, U. S. Cartridge Co., Lowell, Mass.
Dodge, Ernest W.	Vb	
Downs, John F.	VIId	With Heinze Electric Co., Lowell, Mass.
Dulligan, Thomas	VIa	With U. S. Cartridge Co., Lowell, Mass.
Flaherty, William	Vb	With Faulkner's Mill, No. Billerica, Mass.
Fournier, Albert A.	Ia	Overseer, Renfrew Mfg. Co., Adams, Mass.
Fujiyoshi, Heisayu	Va	Died April 19, 1915.
Gakidis, Alexander N.	IVa	Proprietor, The Arsculapius Pharmacy, Manchester, N. H.
Garrity, Joseph F.	VIId	Machinist, Tremont & Suffolk Mills, Lowell, Mass.
Glennon, Edward M.	IVa	Assistant Dyer, Dana Warp Mills, Westbrook, Me.
Goodwin, Ross	Vb	With Heinze Electric Co., Lowell, Mass.
Gustafson, Alfred L.	IVa	Steamfitter, J. F. Morgan Son, Lynn, Mass.
Handley, John M.	Vb	Lowell, Mass.
Hanslip, Charles W.	Vb	
Hartwell, Marcus H.	Ia-Va	Cost Clerk, Warren Cotton Mills, West Warren, Mass.
Heaton, Forster G.	IV	Died December, 1914.
Herrick, William E.	VII	Overseer, Albany Felt Co., Albany, N. Y.
Hibbert, George E.	Vc	See Evening, 1910.
Hodge, William	VIa	Efficiency Work, Farwell Bleachery, Lawrence, Mass.
Kennedy, William E.	VIa	Invoicing Clerk, Arlington Mills, Lawrence, Mass.
Lachance, Melina	IIIB	With A. G. Pollard Co., Lowell, Mass.
Lemire, Arthur	Va	See Evening, 1910.

Name	Course	Occupation
Linberg, Joseph F.	IVa	Of J. F. Linberg Co., Jamestown, N. Y.
Logan, George H. S.	IV	
McNamara, Thomas	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Manning, James B.	IVa	Dyer, Felters Co., Millbury, Mass.
Marsden, Phillips B.	IVa	Assistant Chemist, Arlington Mills, Lawrence, Mass.
Milot, Joseph E.	VIc	Draftsman, Harry Prescott Graves, Architect, Lowell, Mass.
Murphy, *Howard H.	IIb	In business, Boston, Mass.
Nelson, James A.	Ia	Clerk, R. P. Webster, Lowell, Mass.
Nelson, Sigfred W.	VIId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Newall, Preston	Ia	Overseer, Kosciusko Cotton Mill, Kosciusko, Miss.
Newsholme, Charles E.	VIb	Student, Wentworth Institute, Boston, Mass.
Nichol, Samuel J.	IVa	In charge of Dyehouse, Waterhead Mills, Lowell, Mass.
Nichols, Nathan A.	VIb	Draftsman, The Lamson Co., Lowell, Mass.
Parkin, Prescott R.	Vb	Stock Clerk, General Electric Co., East Boston, Mass.
Pedler, William A.	IVa	See Evening, 1906.
Perron, Francis J.	Vb	With Brightwood Mfg. Co., No. Andover, Mass.
Perry, Clarence R.	IIb	Assistant Superintendent, Worsted Dept., Washington Mills, Lawrence, Mass.
Racicot, Marie E.	IIIB	Student, Lowell Textile School, Lowell, Mass.
Robinson, James E.	VII	Finisher, Adams Mfg. Co., Shelton, Conn.
Robinson, Ruddach P.	VII	Paymaster, Beaver Brook Mills, Collinsville, Mass.
Rogers, John F.	Ia	Lowell, Mass.
Rowlands, Harold	Va	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Shaffer, William A.	VIId	Machinist, W. W. Carey, Lowell, Mass.
Shields, John J.	Va	Lowell, Mass.
Stanley, John R.	IIb	Section Hand, Star Worsted Co., Fitchburg, Mass.
Stearns, Orlo F.	IVa	With Bureau of Standards, U. S. Department of Commerce, Pittsburg, Pa.
Stewart, George	Ia-IVa	Overseer of Dyeing, Massachusetts Cotton Mills, Lowell, Mass.
Tennant, Joseph A.	VIb	Machinist, Pacific Mills, Lawrence, Mass.
Wade, Frank J.	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Walton, Frank L.	Ia	Manager, Tupelo Cotton Mills, Tupelo, Miss.
Ward, Bernard D.	IIIA	Pattern Weaver, U. S. Bunting Co., Lowell, Mass.
Williams, Allen R.	Va	See Evening, 1910.
Willmott, Herbert J.	VIa	With Lamson Co., Lowell, Mass.
Wollin, Frederick W.	Va	Utica, N. Y.
Wright, Frederick J.	Vb	With Massachusetts Mohair Plush Co., Lowell, Mass.



## Day Course, 1912

### Diploma Graduates

Name	Course	Occupation
Bigelow, Prescott F.	II	Investigator, Cheney Bros., So. Manchester, Conn.
Brown, Rollins G.	IV	With York Mfg. Co., Saco, Me.
Coan, Charles B.	IV	Overseer of Dyeing, Renfrew Mfg. Co., Adams, Mass.
Conant, Richard G.	I	Salesman, Brighton Mills, Passaic, N. J.
Dalton, Gregory S.	IV	Chemist, Federal Rubber Co., Cudahy, Wis.
Dearth, Elmer E.	IV	Head of Fabric and Specifications Department, Federal Rubber Co., Cudahy, Wis.
Elliot, Gordon B.	II	With Cheney Bros., So. Manchester, Conn.
Engstrom, Karl E.	VI	Student, Massachusetts Institute of Technology, Boston, Mass.
Frost, Harold B.	II	With Ayer Mills, Lawrence, Mass.
Hassett, Paul J.	IV	Chemist, Remington Typewriter Co., Bridgeport, Conn.
Holmes, Otis M.	VI	Manager of Stock Room, Gardner Gas Co., Gardner, Mass.
Hood, Leslie N.	IV	Chemist, Sayles Finishing Co., Plant B, Saylesville, R. I.
Lamont, Robert L.	II	With Cheney Bros., So. Manchester, Conn.
Leitch, Harold W.	IV	Chemist, The Brightwood Mfg. Co., No. Andover, Mass.
Munroe, Sydney P.	I	Assistant Superintendent, Merchants Mfg. Co., Fall River, Mass.
Niven, Robert S.	VI	Draftsman, Crosby Steam Gage and Valve Co., Charlestown, Mass.
Pottinger, James G.	II	Salesman, S. Slater and Sons, Inc., New York City.
Roche, Raymond V.	IV	Assistant Dyer and Bleacher, Renfrew Mfg. Co., Adams, Mass.
Rundlett, Arnold D.	VI	With Ayer Mills, Lawrence, Mass.
Shea, Francis J.	II	Investigator, Cheney Bros., South Manchester, Conn.
Sullivan, John D.	VI	With Haverhill Box Board Co., Bradford, Mass.
Thaxter, Joseph B., Jr.	II	Salesman, Smith and Dove Mfg. Co., Andover, Mass.
Whitehill, Warren H.	IV	Chemist, M. T. Stevens & Sons Co., Franklin Mills, Franklin, Mass.
Yavner, Harry	II	Foreman, Scouring Dept., S. A. Maxwell Co., Bangor, Me.

## Evening Course, 1912

### Certificate Holders

Beech, Wilfred	Ia	With Grant Yarn Co., Fitchburg, Mass.
Bernard, Joseph E.	VIId	Machinist, Upton & Gilman, Lowell, Mass.
Blais, Emile	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Blanchette, Eugene	IIIb	With T. Martin & Bro. Mfg. Co., Lowell, Mass.

Name	Course	Occupation
Boije, Walter F.	I Ib-VII	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Brainerd, Albert C.	Ia	Second Hand, Everett Mills, Lawrence, Mass.
Brainerd, Harry C.	Ia	Second Hand, Lower Pacific Mills, Lawrence, Mass.
Bramley, Charles	Va	With Everett Mills, Lawrence, Mass.
Broderick, Thomas H.	VII	Receiving Clerk, Stevens Mills, North Andover, Mass.
Browne, Charles D.	Ia	Sherman Mfg. Co., Sherman, Texas.
Burke, George J.	VII	With Merrimack Woolen Co., Dracut, Mass.
Buzzell, Fred S.	IIIa	Second Hand, Arlington Mills, Lawrence, Mass.
Carlson, Goddard O.	VII	Overseer, Stirling Mills, Lowell, Mass.
Christenson, John O.	VIb	Student, Lowell, Mass.
Clark, John W.	IVa	Dyer, Whitestone Worsted Co., Danielson, Conn.
Daskalakis, Efthimios Z.	Vb	With Boott Mills, Lowell, Mass.
Dick, Henry K.	Ia	Instructor, Textile Dept., A. & M. College, West Raleigh, N. C.
Dittman, Ralph A.	IIIa	Assistant Superintendent, The Glazier Mfg. Co., So. Glastonbury, Conn.
Dollbaum, John A.	IIIa	
Donahy, William H.	Vb	Section Hand, Pentucket Narrow Fabric Co., Lowell, Mass.
Dulligan, Charles E.	IVa	See Evening, 1909.
Egan, Charles H.	IVa	Chemist, A. D. Little, Inc., Boston, Mass.
Freeman, Ralph W.	IVa	Lowell, Mass.
Frothingham, Newton S.	Ia	Of Langdon & Frothingham, Boston, Mass.
Graves, John F.	VIb	Draftsman, Smith and Brooks, Lowell, Mass.
Greenwood, Ralph F.	VII	Manager, Stafford Mills, Central Falls, R. I.
Hansen, Hans M.	VId	Foreman, U. S. Cartridge Co., Lowell, Mass.
Hartshorn, George T.	VII	Assistant Manufacturing Superintendent, American Felt Co., Glenville, Conn.
Hibbert, George E.	Vb	See Evening, 1910.
Higginson, Joseph H.	IIIa	Assistant Superintendent, Pentucket Mills, Haverhill, Mass.
Holland, Walter F.	IIIa	Loomfixer, Washington Mills, Lawrence, Mass.
Hutchings, James C.	VII	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Jackson, Frank	VId	See Evening, 1910.
Jasper, Grant	Vc	With Bigelow Carpet Co., Lowell, Mass.
Kent, Arthur	VIb	Died August, 1914.
Kerrigan, Arthur J.	VIa	Clerk, Saco-Lowell Shops, Lowell, Mass.
Lambert, Harry	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Lapierre, Alderic S.	IIIa	Second Hand, Merrimack Mfg. Co., Lowell, Mass.
LaPorte, Philip J.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.

Name	Course	Occupation
Leith, Joseph E.	Vb	Second Hand, Jackson Co., Nashua, N. H.
Lockberg, John L.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Lowe, John C.	IIb	Instructor, Woolen Yarns, Lowell Textile School, Lowell, Mass.
McCann, Martin	Vb	
Macdonald, Chester W.	VIa	Department Head, Practical Electricity, Lowell Vocational School, Lowell, Mass. With George F. White, Lowell, Mass.
Michael, Joseph C.	Vb	
Muldoon, Joseph M.	VIb	
Naylor, Charles	IVa	Died January, 1914.
Orrell, Frank L.	IIb	See Evening, 1909.
Palm, Carl H.	VIa	Tool-Maker, Metz Automobile Co., Waltham, Mass.
Pihl, Ingrid I.	IIb	Stenographer, Victor Pihl, Lowell, Mass.
Preble, George A.	Va	See Evening, 1908.
Prescott, William B.	Va	Cotton Broker, A. H. Chase & Co., Boston, Mass.
Redman, Henry S.	VIa	See Evening, 1904.
Riley, Edward T.	IIIa	No. Billerica, Mass.
Rollins, Henry E.	VII	Dyer, Richardson, Foster Co., Central Falls, R. I.
Royds, James	Ia	Overseer, Boott Mills, Lowell, Mass.
Savage, Charles F.	IVa	In business, Savage Bros., Lowell, Mass.
Shearer, David D.	VII	With U. S. Worsted Co., Lawrence, Mass.
Skidmore, Russell B.	VIb	Draftsman, Lamson Store Service Co., Lowell, Mass.
Smith, William F.	VId	Lowell, Mass.
Stevens, Harold S.	IIIa	Of Stevens Shoe Co., Haverhill, Mass.
Stevenson, Robert P.	Ia	Salesman, Wm. V. Threlfall, Boston, Mass.
Sugden, Albert G.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Swanson, Victor E.	IVa	Carbonizer, Stirling Mills, Lowell, Mass.
Taylor, Harold S.	VIb	Clerk, Wing's Market, Lowell, Mass.
Towers, Frederic G.	Ia	Section Hand, Pacific Mills, Lawrence, Mass.
Turgeon, Roderick	IVa	Clerk, Talbot Dyewood and Chemical Co., Lowell, Mass.
Vause, John	Va	With Pacific Mills, Lawrence, Mass.
Ward, Herbert H.	Vb	Gilbertville, Mass.
Webster, Orrin H.	Ia	Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.
Wicks, Frederic M.	IIIa	Second Hand, Pentucket Mills, Haverhill, Mass.
Wilkinson, Joseph	IIIa	Loomfixer, U. S. Bunting Co., Lowell, Mass.
Wood, Arthur S.	Va	Second Hand, Granby Elastic Web Co., Granby, P. Q.

### Day Course, 1913

#### Degree Graduates

Holmes, Otis M.	VI	See Day, 1912.
Pensel, George R.	IV	Assistant Chemist, S. Slater and Sons, Inc., Webster, Mass.

Diploma Graduates	
Name	Course      Occupation
Bennett, Herbert B.	II With Catlin and Co., New York City.
Cleary, Charles J.	II Laboratory Assistant in Textiles, Bureau of Standards, Washington, D. C.
Cook, Kenneth B.	I Designer, American Mills Co., Waterbury, Conn.
Davieau, Arthur N.	VI With American Felt Co., Hyde Park, Mass.
Davis, Alexander D.	VI Instructor, Lowell Textile School, Lowell, Mass.
Dearborn, Roy	VI Assistant Engineer, Abbot Academy, Andover, Mass.
Gadsby, Arthur N.	II Assistant Physicist, Bureau of Standards, Washington, D. C.
Horton, Chester T.	VI Wilmington, Mass.
Johnson, Arthur K.	IV Student, Massachusetts Institute of Technology, Boston, Mass.
Mather, Harold T.	VI Safety Inspector, Aetna Life Insurance Co., Hartford, Conn.
Murray, James	IV Chemist, Nashua Gummed and Coated Paper Co., Nashua, N. H.
Peck, Carroll W.	IV Salesman, Brewer and Co., Worcester, Mass.
Pillsbury, Ray C.	I Investigator, Cheney Bros., South Manchester, Conn.
Plummer, Elliott B.	IV Chemist, Glenlyon Dye Works, Phillipsdale, R. I.
Putnam, Philip C.	IV Assistant to Dyer, Glenlyon Dyeworks, Saylesville, R. I.
Richardson, Richardson P.	I Assistant Superintendent, Nos. 2 and 3 Thread Mills, Clarke Thread Co., East Newark, N. J.
Sylvain, Charles E.	VI Assistant to Superintendent Engineer, Ludlow Manufacturing Associates, Ludlow, Mass.
Walen, Ernest D.	VI Laboratory Assistant, Bureau of Standards, Washington, D. C.

### Evening Course, 1913

Certificate Holders	
Abbott, Arthur G.	Vb With Wood Worsted Mills, Lawrence, Mass.
Allen, William J.	IVa Foreman, Passaic Print Works, Passaic, N. J.
Anderton, Harry	Vb See Evening, 1910.
Atkinson, Reginald C.	IVa Laboratory Clerk, Silesia Worsted Mills, No. Chelmsford, Mass.
Bassett, Cyrus J.	Vb Clerk, C. S. Cartridge Co., Lowell, Mass.
Beaulieu, William E.	IIb Machinist, U. S. Cartridge Co., Lowell, Mass.
Bell, Charles W.	VIa Electrician, Gorham Mfg. Co., Providence, R. I.
Black, Alexander S.	Vb Bookkeeper, Pacific Mills, Lawrence, Mass.

Name	Course	Occupation
Breen, James D.	Vc	Second Hand, Appleton Co., Lowell, Mass.
Breen, John P.	Vb	With Bay State Mills, Lowell, Mass.
Butland, Ralph A.	VII	With Washington Mills, Lawrence, Mass.
Buzzell, Fred S.	VII	See Evening, 1912.
Charleton, Peter	VIa	Lowell, Mass.
Clarke, Wesley J.	VId	With Tyer Rubber Co., Andover, Mass.
Classon, Walter H.	Vc	Loomfixer, Nashua Mfg. Co., Nashua, N. H.
Cote, Fred J.	VIa	With General Electric Co., Lynn, Mass.
Cox, Edward J.	Ia	See Evening, 1910.
Cudmore, Edward T.	VId	Machinist, Merrimack Mfg. Co., Lowell, Mass.
Cushing, Lester H.	Ia	Instructor, Lowell Textile School, Lowell, Mass.
Daskalakis, Efthimios Z.	Vc	See Evening, 1912.
Devine, Mary F.	IVa	Teacher, Public School, Lowell, Mass.
Doyle, John B.	VId	With M. Doyle & Son, Lowell, Mass.
Dunn, George C.	IVb	See Evening, 1908.
Ekengren, Hilding C.	IIIb	Clerk, Dickerman and McQuade, Lowell, Mass.
Forrest, William R.	VId	Machinist, United Shoe Machinery Co., Beverly, Mass.
Freeman, George D.	VId	Clerk, James E. Freeman, Lowell, Mass.
Giffin, Charles H.	IIIa	Overseer, C. J. Amidon and Son, Wilton, N. H.
Giffin, George R.	IIIa	Overseer, Somerset Mfg. Co., Raritan, N. J.
Gile, Harold E.	IVa	Assistant Chemist, Ayer Mills, Lawrence, Mass.
Gordon, Loyd H.	VIa	Pattern Maker, Saco-Lowell Shops, Lowell, Mass.
Hannagan, Edward F.	IIb	Section Hand, Washington Mills, Lawrence, Mass.
Hanson, Edward	Ia	See Evening, 1908.
Herron, Alexander T.	Ia	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Higgins, Alfred	IIIa	Designer and Second Hand, Wauregan Co., Wauregan, Conn.
Hoelzel, Louis C.	VIa	With Washington Mills, Lawrence, Mass.
Howker, John	Ia	Foreman, Boott Mills, Lowell, Mass.
Innes, Andrew K.	Vb	Clerk, Arlington Mills, Lawrence, Mass.
Jackson, Walter J.	IIa	Assistant Superintendent, Sutton's Mills, No. Andover, Mass.
Jarvis, Charles	Vb	
Jones, Herbert	Ia	Night Superintendent, Killingly Mfg. Co., Killingly, Conn.
Kershaw, Samuel S.	Vb	See Evening, 1910.
Kirkpatrick, Lloyd A.	Ia	Superintendent, Merrimack Utilization Co., Lowell, Mass.
LaJenne, Joseph A.	IVc	See Evening, 1910.
Lambert, Seth	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Lang, William A.	Vc	With Lockwood, Greene and Co., Boston, Mass.



Name	Course	Occupation
Learned, Frank E.	Va	Pattern Weaver, Pemberton Mills, Lawrence, Mass.
Leaver, Raymond J.	VIb	Draftsman and Clerk, Arlington Mills, Lawrence, Mass.
Leonard, Charles W.	VII	Second Hand, Dyehouse, Cowan Woolen Co., Lewiston, Me.
Lowe, Harry F.	Va	With Merrimack Mfg. Co., Lowell, Mass.
McDonald, William A.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
McGowan, Annie C.	IIIb	With Lowell Hosiery Co., Lowell, Mass.
McGurn, James P.	VIId	Machinist, B. & M. Car Shops, Billerica, Mass.
Maguire, Andrew F.	Vb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Manning, James B.	IVb	See Evening, 1911.
Maynard, Wilfred B.	VII	Salesman, Middlesex Co., Lowell, Mass.
Metcalfe, Walter B.	IIb	Overseer, Silesia Worsted Mills, North Chelmsford, Mass.
Miller, Ernest P., Jr.	Ib	With Cheney Bros., So. Manchester, Conn.
Monahan, Patrick H.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Murphy, Leo T.	Vc	Assistant Colorist, Bigelow-Hartford Carpet Co., Lowell, Mass.
Musard, Henry A.	Vc	Machinist, Remington Arms, Bridgeport, Conn.
Nelson, Ernest H.	Ib	See Evening, 1900.
Nicoll, John	IVb	See Evening, 1910.
Orrell, Ernest R.	VIId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Orrell, Frank L.	Vb	See Evening, 1909.
Preble, George A.	Vb-Vc	See Evening, 1908.
Quinn, James H.	VII	Cloth Inspector, Washington Mills, Lawrence, Mass.
Randall, William O.	IIb	With Wood Worsted Mills, Lawrence, Mass.
Redman, Henry S.	Ib	See Evening, 1904.
Redpath, Robert H.	VII	With Brightwood Mfg. Co., No. Andover, Mass.
Reynolds, James J.	Vc	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Rollins, Sidney R.	IIb	Clerk, American Woolen Co., Boston, Mass.
Shaw, William	VIa	Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Shearer, David D.	Vb	See Evening, 1912.
Sleeper, Robert R.	VII	See Day, 1900.
Soule, William N.	VIId	Machinist, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Sugden, Albert G.	VII	See Evening, 1912.
Sullivan, Michael F.	VIa	See Evening, 1910.
Wainwright, Harold	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Whitman, William P.	IVb	See Evening, 1910.
Wilkinson, Joseph	VII	See Evening, 1912.
Younger, Andrew	IIIa	Instructor, Weaving, Lowell Textile School, Lowell, Mass.

## Day Course, 1914

### Degree Graduates

Name	Course	Occupation
Davis, Alexander D.	VI	See Day, 1913.
Horton, Chester T.	VI	See Day, 1913.
Leitch, Harold W.	IV	See Day, 1912.
Walen, Ernest D.	VI	See Day, 1913.

### Diploma Graduates

Blake, Parker G.	VI	With Crimmins and Pierce, Boston, Mass.
Bradley, Raymond F.	VI	Draftsman, Lockwood, Greene & Co., Boston, Mass.
Brickett, Raymond C.	II	Clerk, Pentucket Mills, Haverhill, Mass.
Creese, Guy T.	IV	Chemist, Creese and Cook Co., Danvers, Mass.
Dorr, Clinton L.	VI	Malden, Mass.
Fisher, Russell T.	VI	Salesman, Marshall Field & Co., New York City.
Lillis, Marvin H.	IV	With Brightwood Mfg. Co., No. Andover, Mass.
McGowan, Frank R.	VI	With U. S. Cartridge Co., Lowell, Mass.

## Evening Course, 1914

### Certificate Holders

Alter, Frederick A.	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Bakewell, Albert	Vb	With Boott Mills, Lowell, Mass.
Barnes, Hammond	Ia - Va	With Massachusetts Cotton Mills, Lowell, Mass.
Bixby, Edward E.	IIIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Boyle, John E.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Brandy, William F.	IVa	Second Hand, Henry Klous, Inc., Lawrence, Mass.
Brown, James H.	VIa	With Lowell and Fitchburg St. Ry. Co., Forge Village, Mass.
Brown, Leon E.	VIa	Foreman Pattern Maker, Lamson Co., Lowell, Mass.
Burns, Richard L.	VIIb	Pattern Making, Tremont and Suffolk Mills, Lowell, Mass.
Campling, Frank	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Clark, John H.	IVa	Lawrence, Mass.
Cochrane, William D.	IVa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Collins, Frank	VIa	Draftsman, C. G. Sargent's Sons Corp., Graniteville, Mass.
Cooper, George H.	Ia	With Vickery and Hill Publishing Co., Augusta, Me.
Cox, Edward J.	Ia	See Evening, 1910.
Delderfield, John W.	VId	Storekeeper, Lamson Co., Lowell, Mass.
Donahue, William E.	VIIb	Foreman, U. S. Cartridge Co., Lowell, Mass.
Dowd, Martin F.	IIIa	Pattern Weaver and Dresser, U. S. Worsted Co., Lawrence, Mass.

Name	Course	Occupation
Emmons, Harry I.	IVa	Assistant Dyer, Washington Mills, Lawrence, Mass.
Freeman, Ralph W.	IVb	See Evening, 1912.
Gibbons, James J.	VIa	With D. H. Caswell, Optician, Lawrence, Mass.
Giffin, Charles H.	VII	See Evening, 1913.
Giffin, George R.	VII	See Evening, 1913.
Gill, Gardner G.	IVa	Travelling Salesman, W. A. Lippincott Co., Boston, Mass.
Gilman, Edward T.	VIa	Master Mechanic, Boott Mills, Lowell, Mass.
Haithwaite, Albert	Ia	With Appleton Co., Lowell, Mass.
Haldane, Andrew	Va	Section Hand, Pacific Mills, Lawrence, Mass.
Hall, Sydney H.	VIIb	Assistant Manager, John Dennis Machine Co., Lowell, Mass.
Hammond, John N.	Vb	Second Hand, Sutton's Mills, No. Andover, Mass.
Hannagan, Edward F.	VII	See Evening, 1913.
Hanson, Winfield S.	IVa	Clerk, Union National Bank, Lowell, Mass.
Hartwig, Albert E.	Vb	With Washington Mills, Lawrence, Mass.
Henzie, John J.	IIIa	
Herbst, Gustav F.	Va	New York City.
Herron, Alexander T.	IVa	See Evening, 1913.
Hill, Bruce	IIIa	With Arlington Mills, Lawrence, Mass.
Hill, Paul	VII	With Lawrence Dye Works, Lawrence, Mass.
Horman, Charles P.	IIIa	Loomfixer, No. Billerica Co., No. Billerica, Mass.
Howe, Charles W., Jr.	VIa	Machinist, Saco-Lowell Shops, Lowell, Mass.
Howker, John	Va	See Evening, 1913.
Huse, Charles H.	VIIb	Student, Lowell High School, Lowell, Mass.
Jackson, Walter J.	Vb	See Evening, 1913.
Johnson, Arthur O.	IVa	With Washington Mills, Lawrence, Mass.
Kent, Arthur	VIIa	Died August, 1914.
Kirkpatrick, Lloyd A.	Ia	See Evening, 1913.
LaPrise, Frank E.	IVa	Assistant Dyer, Pondicherry Woolen Mills, Bridgton, Me.
Laurin, Erick T. L.	VIIb	Student, Lowell Textile School, Lowell, Mass.
Learned, Frank E.	Vc	See Evening, 1913.
Leaver, Harold E.	IIb	Colorist, Arlington Mills, Lawrence, Mass.
Leith, Joseph E.	IIIa	See Evening, 1912.
Lewis, Charles S.	VIa	Fireman, Silesia Worsted Mills, North Chelmsford, Mass.
Linehan, Thomas W.	VII	Second Hand, Finishing, Ayer Mills, Lawrence, Mass.
Looby, George A.	Vc	With Bigelow Hartford Carpet Co., Lowell, Mass.
Lowe, Harry F.	Vb	See Evening, 1913.
Luce, Harry A.	VII	Cloth Inspector, Musketaquid Mills, Lowell, Mass.
MacDonald, John F.	Va	Clerk, Boott Mills, Boston, Mass.

Name	Course	Occupation
McElroy, Claude R.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Mack, Clarence P.	IIIa	Pattern Weaver, U. S. Worsted Co., Lawrence, Mass.
Macnee, Forrest F.	IIb	With George E. Kunhardt, New York City.
Mahoney, Joseph	Vc	Loomfixer, Bigelow-Hartford Carpet Co., Lowell, Mass.
Mears, Lewis N.	IVa	In Dyehouse, Boston Rubber Shoe Co., Malden, Mass.
Milot, Aram A.	Vb	
Mullen, Frank J.	VId	Steamfitter, Carroll Bros., Lowell, Mass.
Nichol, Samuel J.	IVb	See Evening, 1911.
Nichols, Fernald H.	VIIb	Student, Lowell High School, Lowell, Mass.
O'Brien, Frederick A.	VIIb	Machinist, Heinze Electric Co., Lowell, Mass.
Parker, John G.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Pickles, Wilfrid	Va	With Pacific Mills, Lawrence, Mass.
Pierce, Duncan H.	VII	Assistant New England Manager, Platt and Washburn Refining Co., Boston, Mass.
Pierce, Gordon J.	Vb	With Riverside Mills, Olneyville, R. I.
Pihl, Mansfred M.	VIIb	Draftsman, U. S. Cartridge Co., Lowell, Mass.
Pinkham, Banford O.	VId	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Playdon, Louis C.	Ia	Instructor, Cotton Dept., Lowell Textile School, Lowell, Mass.
Redpath, Robert H.	Vb	See Evening, 1913.
Roesler, Alfred	IIIa	With Wood Worsted Mills, Lawrence, Mass.
Rouine, Francis E.	VIIb	With Bigelow-Hartford Carpet Co., Lowell, Mass.
Schmidt, Hartman F.	IIb - VII	Overseer, Albany Felt Co., Albany, N. Y.
Smith, Leonard	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Steere, Samuel A.	Va	Overseer, Jenckes Spinning Co., Pawtucket, R. I.
Stewart, George	Va	See Evening, 1911.
Stokham, Ernest F.	IVa	Assistant Chemist, Bigelow-Hartford Carpet Co., Lowell, Mass.
Torpey, Henry K. W.	VIIb	Clerk in Dyehouse, Mass. Cotton Mills, Lowell, Mass.
Turner, Roscoe C.	IIb	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Twomey, Hugh	VId	Blacksmith, Lowell, Mass.
Woodbury, Eugene P.	VII	With George E. Kunhardt, Lawrence, Mass.
Younger, Andrew	VII	See Evening, 1913.

#### Day Course, 1915

Cosendai, Edwin F. E.	IV	Chemist, Cosendai Dye Works, Saginaw, Mich.
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Name	Course	Occupation
McGowan, Frank R.	VI	See Day, 1914.
Neyman, Julius E.	IV	Chemist, Lawrence Dye Works, Lawrence, Mass.
Rich, Edward	IV	Research Chemist, Weilles Mfg. Co., New Brunswick, N. J.
Sawyer, Joseph W.	IV	Chemist, Price Fire and Water Proofing Co., Poughkeepsie, N. Y.

	Diploma	Graduates
Harrington, Thomas	IV	Cambridge, Mass.
O'Brien, Philip F.	II	Yarn Tester, U. S. Worsted Co., Lawrence, Mass.

### Evening Course, 1915

	Certificate	Holders
Armitage, Ernest	Vb	With Ayer Mills, Lawrence, Mass.
Atkinson, Henry	IIIa	Assistant Designer, Arlington Mills, Lawrence, Mass.
Ballinger, Raymond F.	Vib	Fixer, U. S. Worsted Co., No. Chelmsford, Mass.
Barrows, Ariston K.	Va	Paymaster, Bay State Mills, Lowell, Mass.
Birdsall, James E.	Iib	Loomfixer, Washington Mills, Lawrence, Mass.
Bonney, Nathaniel H.	IVa	Draftsman, Pacific Mills, Lawrence, Mass.
Bordeleau, Georges A.	IIib	Drug Clerk, Dows Drug Store, Lowell, Mass.
Branch, Guy E.	Iib	With Lower Pacific Mills, Lawrence, Mass.
Brandy, William F.	IIa	See Evening, 1914.
Butland, Ralph A.	Iib	See Evening, 1913.
Caldwell, James	VId	Machinist, M. T. Stevens Co., Andover, Mass.
Campbell, Charles F. P.	IIIb	Student, Lowell High School, Lowell, Mass.
Casavant, Elphege H.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Chadwick, Laurie	Vb	With American Woolen Co., Lawrence, Mass.
Cochrane, John	IVa	See Evening, 1911.
Cox, Edward J.	Vc	See Evening, 1910.
Dubois, Ubald E.	Vib	Office Clerk, Saco-Lowell Shops, Lowell, Mass.
Early, William E.	Vib	Clerk, Saco-Lowell Shops, Lowell, Mass.
Egan, John W.	Vib-VId	Machinist, F. S. Perkins Co., Lowell, Mass.
Eichhorn, Paul A.	VIa	With Washington Mills, Lawrence, Mass.
Fancuf, George J.	Vib	Patternmaker, The Lamson Co., Lowell, Mass.
Fernley, Bert D.	Vib-VId	Fixer, U. S. Cartridge Co., Lowell, Mass.
Flemings, Lester A.	Ia	See Evening, 1910.
Ford, Joseph L.	IIIa	With Pacific Mills, Lawrence, Mass.
French, George W., Jr.	IIIa	Instructor, Newton Vocational School, Newton, Mass.



Name	Course	Occupation
Fuller, Edwin M.	Ia	Office Manager, Waterhead Mills, Inc., Lowell, Mass.
Gagnon, Arthur C.	VId	Stock Fitter, L. H. Spaulding and Co., Lowell, Mass.
Garrity, Peter F.	Va	With Merrimack Mfg. Co., Lowell, Mass.
Geaney, James H.	VII	Overseer, Brightwood Mfg. Co., North Andover, Mass.
Gearin, John W.	VIb	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
Gerry, Churchill	VIa	Telephone Assembler, Western Electric Co., Boston, Mass.
Goddard, Harold W.	VIb	Died August 31, 1915.
Goddard, Walter L.	VII	Clerk in Superintendent's Office, Walworth Bros., Lawrence, Mass.
Gustafson, Alfred L.	VIa	See Evening, 1911.
Hale, Frank O.	Ia	Clerk, Saco-Lowell Shops, Lowell, Mass.
Hall, Richard G.	Ia	Machinist, Lawrence Mfg. Co., Lowell, Mass.
Halloran, Joseph M.	IVa	Chauffeur, A. G. Pollard, Lowell, Mass.
Hanley, Edward T.	IIb	Clerk, Abbot Worsted Co., Forge Village, Mass.
Hashmatian, Harry	IIb	Lowell, Mass.
Healy, Andrew J.	VId	Machinist, F. S. Perkins Co., Lowell, Mass.
Henderson, George R.	IVa	Second Hand, Dychouse, Oneida Bleachery, Inc., New York Mills, New York.
Higginbottom, Harold J.	IVa	In Dychouse, Lower Pacific Mills, Lawrence, Mass.
Jackson, Charles F.	VIb	With M. T. Stevens and Sons, North Andover, Mass.
Jackson, Walter J.	IIIa-VII	See Evening, 1913.
Kannheiser, William A.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Keleher, John L.	VId	Lowell, Mass.
Kelly, Thomas F.	IVa	Assistant Chemist, Merrimack Mfg. Co., Lowell, Mass.
Kenyon, Herbert	Ia	Die Grinder, U. S. Cartridge Co., Lowell, Mass.
Kyle, George S.	Ia	With Muscogee Mfg. Co., Columbus, Ga.
Lambert, Harry	Vb	See Evening, 1912.
Lane, Michael J.	VII	Office Clerk, Arlington Mills, Lawrence, Mass.
Langevin, George F.	VIb	Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Leather, Seward S.	IIb	With Arlington Mills, Lawrence, Mass.
Lees, William H.	IIIa	With Lowell Narrow Fabric Co., Lowell, Mass.
Leland, Raymond C.	VIb	Student, Worcester Polytechnic Institute, Worcester, Mass.
Leonard, Charles W.	IVb	See Evening, 1913.
Lightbown, William H.	Vb	Fixer, Silesia Worsted Mills, No. Chelmsford, Mass.
Lister, Henry	VII	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
Logan, Robert F.	Va	Second Hand, Pemberton Mills, Lawrence, Mass.

Name	Course	Occupation
Luce, Harry A.	IIIa	See Evening, 1914.
McCartin, Marietta L.	IIIa	Clerk, U. S. Bunting Co., Lowell, Mass.
McGaunn, Charles	VIId	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGaunn, Theodore	VIId	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGee, David	IVa	Lowell, Mass.
McGrath, William F.	VII	With George E. Kunhardt, Lawrence, Mass.
Maguire, James H.	IIb	See Evening, 1905.
Marsden, Fred	IIIa	Assistant Overseer, U. S. Worsted Co., Lawrence, Mass.
Merrill, Lester C.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
Moss, Joseph	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Mountain, Everett R.	Ia	Second Hand, Bay State Cotton Corp., Lowell, Mass.
Neel, Andrew, Jr.,	IVa	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Nicoll, James K.	VIId	Machinist, Wood Worsted Mills, Lawrence, Mass.
O'Brien, Raymond L.	IVa	Color Chemist, Harry Haigh, Dyestuffs and Chemicals, Boston, Mass.
Obst, Ehrich	VIId	Machinist, Davis and Furber Machine Co., North Andover, Mass.
O'Connor, Frank H.	Ia	Second Hand, Appleton Co., Lowell, Mass.
Pendlebury, David	Ia	Section Hand, Pacific Mills, Lawrence, Mass.
Pendlebury, Harold	VIId	Machinist, Pacific Mill Print Works, Lawrence, Mass.
Pike, Daniel P.	IVa	Farmer, Pike and Pike, Wamesit, Mass.
Poore, Herbert E.	IVa	Assistant Color Mixer, Washington Mills, Lawrence, Mass.
Porter, William E.	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Preble, George A.	IVa	See Evening, 1908.
Regan, Joseph L.	VIb	With Mears and Adams Shoe Co., Lowell, Mass.
Richards, Raymond A.	IIIb	Box Maker, Lawrence Mfg. Co., Lowell, Mass.
Roberts, Joseph	Vb	With Pacific Mills, Lawrence, Mass.
Rodger, Thomas C.	IVa	Storehouse Clerk, B. and M. Railroad, No. Billerica, Mass.
Sanborn, Harold S.	VII	Examiner, Brightwood Mfg. Co., North Andover, Mass.
Schmidt, Hartman F.	IIa	See Evening, 1914.
Scully, Patrick F.	IIIa-VII	With the U. S. Worsted Co., Lowell, Mass.
Shearer, William A.	Vb	With U. S. Worsted Co., Lawrence, Mass.
Shedd, Howard P.	IVb	Chemist, Arthur D. Little, Boston, Mass.
Simmers, Arthur A.	VIIb	Carpenter, Wood Worsted Mills, Lawrence, Mass.
Smart, George A.	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Smith, Gordon N.	IVa	Clerk, Mrs. George Irving, Lawrence, Mass.

Name	Course	Occupation
Smith, Mae V.	IIIb	Lowell, Mass.
Smith, Miles H.	I Ib	With Washington Mills, Lawrence, Mass.
Snickers, Eugene	Ia	
Stafford, James	Va	With American Fibre Co., Lawrence, Mass.
Stahl, Milton C.	I Ib	With Lower Pacific Mills, Lawrence, Mass.
Stewart, Warren D.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.
Strihler, Arthur F.	Vc	With American Woolen Co., Lawrence, Mass.
Swift, John W.	I Ib	Overseer, Hudson Worsted Co., Hudson, Mass.
Thompson, George	Vb	Loomfixer, Ayer Mills, Lawrence, Mass.
Torpey, Henry K. W.	IVa	See Evening, 1914.
Walker, John J.	V Ib	Draftsman, Pacific Mills, Lawrence, Mass.
Walworth, Walter F.	V Ib	Student, Lowell High School, Lowell, Mass.
Waters, Thomas W., Jr.	Va	With Farwell Bleachery, Lawrence, Mass.
Weinhold, William F.	IIIa	With U. S. Worsted Co., Lawrence, Mass.
Whitley, Arthur M.	IIa-IIb	Assistant Superintendent, Bigelow-Hartford Carpet Co., Clinton, Mass.
Wilde, Herman E.	IVa	Color Mixer, Washington Mills, Lawrence, Mass.
Winslow, Warren A.	I Ib	Clerk, Abbot Worsted Co., Forge Village, Mass.
Wood, Samuel J.	Ia	Fixer, Boott Mills, Lowell, Mass.
Zimmer, George D.	IVa	Clerk, H. C. Page, Lowell, Mass.

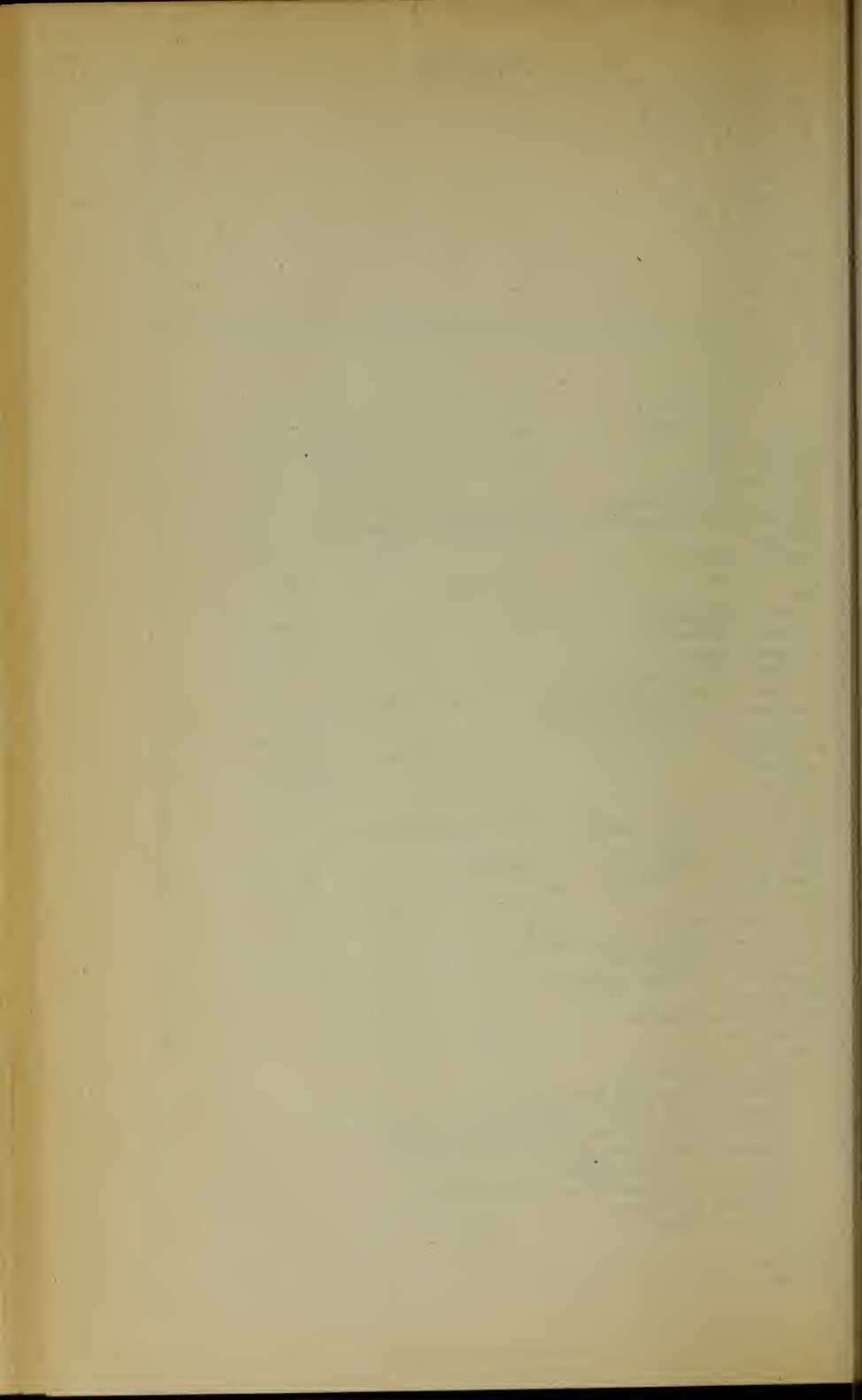
## POSITIONS ATTAINED BY DAY GRADUATES

Directors of textile schools .....	2
Teachers .....	12
Mill vice-presidents .....	2
Mill treasurers and agents .....	11
Mill superintendents .....	20
Mill assistant superintendents .....	10
Mill foremen of departments .....	10
Assistant to superintendent .....	1
Mill auditors and accountants .....	3
Mill clerks .....	2
Second hands .....	6
Managers .....	20
Textile designers and fabric experts .....	18
Purchasing agents .....	1
In commission houses .....	4
Salesmen .....	9
Chemists, dyers and chemical salesmen .....	60
In government employ .....	7
In state employ .....	1
Textile manufacturing, unassigned .....	14
Industrial engineering .....	15
Mill engineering .....	11
Civil engineering .....	1
Electricians .....	2
Paymasters .....	1
Trade journalists .....	3
In business, textile distributing or incidental thereto .....	10
Other business .....	17
Students .....	2
Married women .....	3
Employment not known .....	18
Not employed .....	2
Deceased .....	8
Total .....	306

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**DAY APPLICATION BLANK**  
THIS SHOULD BE FILLED OUT AND SENT TO THE PRINCIPAL

# Lowell Textile School

LOWELL, MASS.

Date.....

Name in Full, .....

Date and Place of Birth, .....

Home Address, { .....  
City or Town State  
.....  
Street and Number

Parent or Guardian, .....

School last attended, .....

**DEGREE COURSES.** (Course should be indicated)  
VI-4 Textile Engineering  
1 General Textile Option IV-4 Chemistry and Textile Coloring  
2 Cotton Option  
3 Wool Option

**DIPLOMA COURSES.** (Course should be indicated)  
I-3 Cotton Manufacturing IV-3 Chemistry and Dyeing  
II-3 Wool Manufacturing VI-3 Textile Engineering  
III-3 Textile Design  
(General Textile Course)

Signature, .....

**ENDORSEMENT BY OFFICER OF SCHOOL LAST ATTENDED**

I hereby certify that.....  
the above applicant has completed the regular course at the.....  
High School, and has satisfactorily passed the following subjects, as specified  
on pages 73-82 of Catalogue of 1916-1917, making a total of ..... points.

REQUIRED SUBJECTS. POINTS.

ELECTIVE SUBJECTS. POINTS.

Signed : .....

Principal..... School, located

at ..... State of.....

Date.....

# EVENING APPLICATION BLANK

THIS SHOULD BE FILLED OUT AND SENT TO THE PRINCIPAL

## Lowell Textile School

LOWELL, MASS.

DATE.....

I, ..... hereby  
apply for admission to the Lowell Textile School as *EVENING*  
student.

Name in Full, .....

Date and Place of Birth, .....

Home Address, { .....  
City or Town State  
.....  
Street and Number

Parent or Guardian, .....

Residence of Parent or Guardian, .....

School last attended, .....

(INDICATE COURSE)

- |  |                                    |
|--|------------------------------------|
| I. Cotton Spinning.                      | V. Weaving.                        |
| II. a—Woolen Spinning.                   | a—Cotton Weaving.                  |
| b—Worsted Spinning.                      | b—Woolen and Worsted Weaving.      |
| III. a—Textile Design.                   | c—Jacquard Weaving.                |
| b—Freehand Drawing.                      | VI. Engineering.                   |
| IV. Chemistry and Dyeing.                | a—Elements of Engineering.         |
| a—Elementary Chemistry.                  | b—Mechanical Drawing.              |
| b—Textile Chemistry and Dyeing.          | d—Machine Shop.                    |
| c—Analytical Chemistry                   | VII. Woolen and Worsted Finishing. |
| d—Textile and Analytical Chem-<br>istry. |                                    |

Signature, .....

ENDORSEMENT BY SOME OFFICER OF SCHOOL LAST ATTENDED

I hereby certify that .....  
the above applicant is duly qualified to pursue with profit the  
work of the Lowell Textile School.

SIGNED : .....

Principal ..... School, located  
at ..... State of .....

Date .....

SERIES 20. NO. 1

*August, 1916*

BULLETIN  
OF THE  
Lowell Textile School

LOWELL, MASS.

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*Issued Quarterly*

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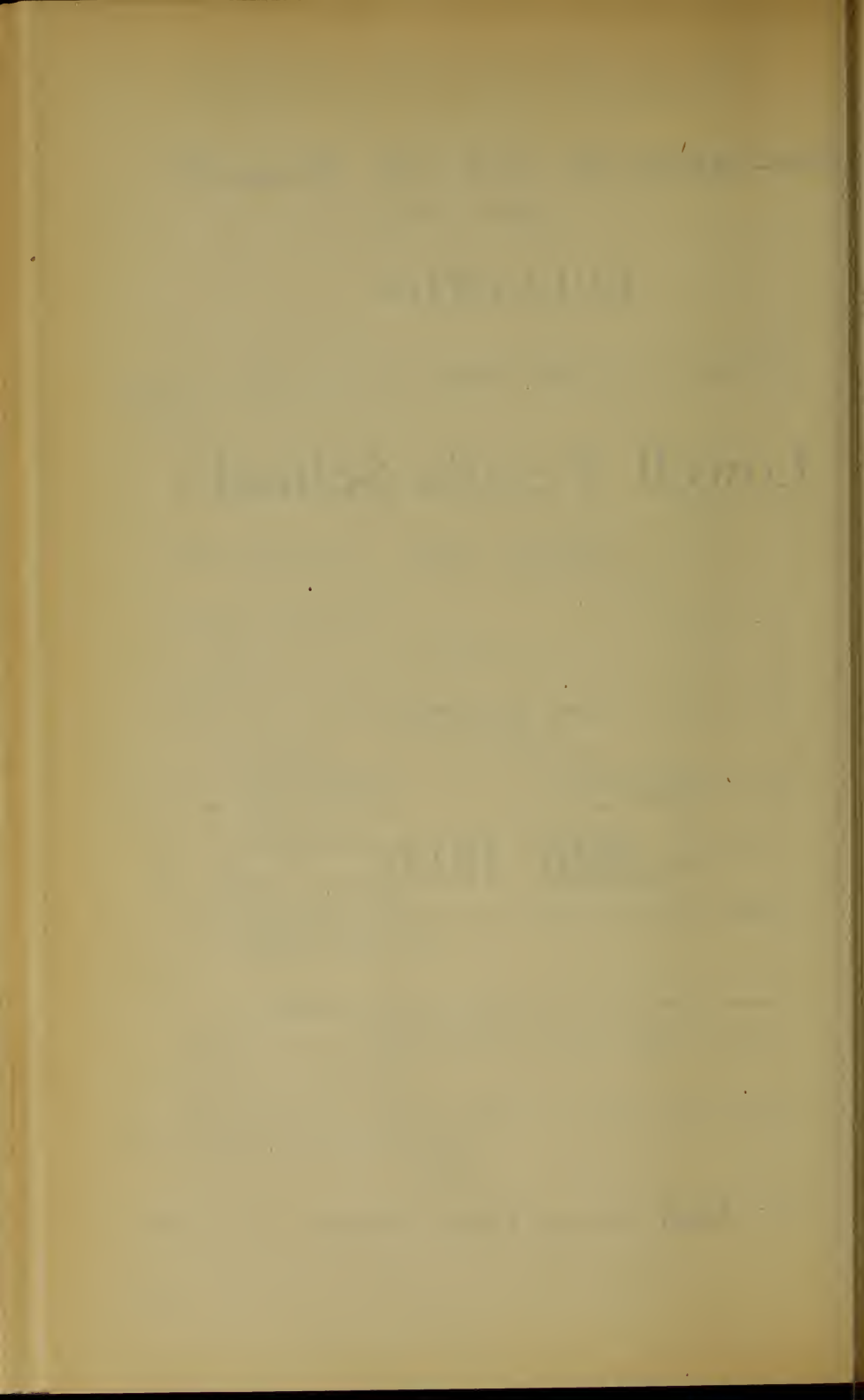
1916 - 1917

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Entered August 26, 1902, at Lowell, Mass., as second class matter,  
under Act of Congress of July 16, 1894.

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*Moody Street and Colonial Avenue*





# Trustees of the Lowell Textile School

(Incorporated 1895)

## Honorary Trustees

FREDERICK FANNING AYER  
New York City

CHARLES H. HUTCHINS

President, Crompton and Knowles Loom Works, Worcester, Mass.

## The Corporation

### Officers, 1916

ALEXANDER G. CUMNOCK, President  
JOHN JACOB ROGERS, Vice-President

JAMES T. SMITH, Clerk  
ARTHUR G. POLLARD, Treasurer

### Trustees

On the part of the Commonwealth of Massachusetts

#### *Ex Officiis*

HIS HONOR CALVIN COOLIDGE  
Lieutenant Governor

DR. PAYSON SMITH  
Commissioner of Education

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916  
Treasurer, Boott Mills

JOHN T. DONEHUE, Lowell, 1918

On the part of the City of Lowell

#### *Ex Officiis*

HON. JAMES E. O'DONNELL,  
Mayor of Lowell

HUGH J. MOLLOY  
Superintendent of Public Schools

WILLIAM W. DUNCAN  
President Municipal Council

By Appointment of the Lowell Textile Council  
MICHAEL DUGGAN

### Permanent Trustees

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

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FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Attorney-at-Law.

WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston Corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

FRANK E. DUNBAR, Lowell, Attorney-at-Law, and President, Appleton Company, Boston Corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

WILLIAM E. HALL, Lowell, Treasurer, Shaw Stocking Company.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Casella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston Corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.

EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston Corporation, mills at Lowell.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDALL, Housatonic, Agent, Monument Mills, class of 1902.

REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.

### Additional Trustees Elected by Alumni Under Act of 1905

For term ending June 30, 1917: Arthur C. Varnum, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.

For term ending June 30, 1918: Edward M. Abbott, class of 1904, Vice-President and Agent, Abbott Worsted Co., Graniteville, Mass.

For term ending June 30, 1919: Edmund A. Lucey, class of 1904, Industrial Engineer, H. L. Gantt, New York City.

For term ending June 30, 1920: Arthur J. Hennigan, class of 1906, New England Representative, Talbot Mills, Boston, Mass.

# OFFICERS OF ADMINISTRATION AND INSTRUCTION

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## ADMINISTRATION

CHARLES H. EAMES, S. B., Principal of the School  
WALTER B. HOLT, Bursar                      STELLA F. MORRILL, Registrar  
FLORENCE M. LANCEY, Librarian              RENA J. LANDERS, Secretary

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## CHIEFS OF DEPARTMENTS

LOUIS A. OLNEY, S. B., M. S.,  
Professor of Chemistry; in charge of Department of  
Chemistry and Dyeing  
EDGAR H. BARKER,  
In charge of Department of Woolen and Worsted  
Yarns  
GEORGE H. PERKINS, S. B.,  
In charge of Department of Textile Engineering  
ARTKUR A. STEWART,  
In charge of Department of Finishing  
STEPHEN E. SMITH,  
In charge of Department of Cotton Yarns and  
Knitting  
HERMANN H. BACHMANN,  
In charge of Department of Textile Design and  
Power Weaving  
LESTER H. CUSHING, A. B.,  
In charge of Department of Languages, History and  
Economics.

## INSTRUCTORS

JOHN N. HOWKER,  
Instructor in Wool Sorting and Scouring  
STEWART MACKAY,  
Instructor in Textile Design and Cloth Analysis  
ROBERT R. SLEEPER,  
Instructor in Dyeing  
HERBERT J. BALL, S. B.,  
Instructor in Mechanical and Efficiency Engineering  
ULYSSES J. LUPIEN, S. B.,  
Instructor in Mathematics, Physics and Electrical  
Engineering

## INSTRUCTORS--CONTINUED

- HOWARD D. SMITH, PH. D.,  
Instructor in General Chemistry and Qualitative Analysis
- RUSSELL B. STODDARD, A. B.,  
Instructor in Organic Chemistry
- JOHN C. LOWE,  
Instructor in Woolen and Worsted Yarns
- CHARLES H. JACK,  
Instructor in Machine Shop Practice
- LOUIS C. PLAYDON,  
Instructor in Cotton Yarns
- BERTRAND F. BRANN, S. B., M. S.,  
Instructor in Quantitative Analysis
- ALEXANDER D. DAVIS, B. T. E.,  
Instructor in Mechanical Drawing and Mechanism
- ANDREW YOUNGER,  
Instructor in Weaving
- MARTIN J. HOELLRICH,  
Instructor in Weaving
- C. LEONARD GLENN,  
Instructor in Finishing
- CHARLES L. HOWARTH,  
Assistant Instructor in Dyeing
- DAVID B. MOREY,  
Instructor in Physical Culture and Languages
- EDGAR L. WOODWARD, S. B.,  
Evening Instructor in Mechanical Drawing
- E. ELIZABETH WHITNEY,  
Evening Instructor in Freehand Drawing
- GEORGE GOODCHILD,  
Evening Instructor in Cotton Yarns
- EDITH C. MERCHANT,  
Evening Instructor in Freehand Drawing
- ARCHIBALD R. GARDNER, M. D.,  
Medical Adviser

# EVENING CLASSES

## COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

The evening classes commence the first Monday of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses.

Courses are offered in:

- I. (a) Cotton Spinning—2 and 3 years.  
(b) Knitting—1 year.
- II. (a) Woolen Spinning—2 years.  
(b) Worsted Spinning—3 years.
- III. (a) Textile Design—3 years.  
(b) Freehand Drawing—3 years.



IV. Chemistry and Dyeing.

- (a) Elementary Chemistry—2 years.

General Chemistry including Inorganic and Organic.

Qualitative Analysis.

- (b) Textile Chemistry and Dyeing—3 years.

Lectures in Textile Chemistry and Dyeing.

Laboratory Work in Dyeing.

- (c) Analytical Chemistry—3 years.

Laboratory Work and Lectures in Quantitative Analysis.

- (d) Textile and Analytical Chemistry—4 years.

Lectures in Textile Chemistry and Dyeing.

Laboratory Work in Analytical Chemistry.

In order to take Course (b), (c), (d), candidates must have certificate from Course (a), or show by examination or approved credentials that they have taken the equivalent work covered by this course.

- V. (a) Cotton Weaving—I year.

- (b) Woolen and Worsted Weaving—I year.

- (c) Dobby and Jacquard Weaving—I year.

- VI. Elements of Engineering—3 years

Mechanics.

Steam.

Electricity.

Machine Shop—2 years.

Mechanical Drawing—3 years.

- VII. Woolen and Worsted Finishing—I year.

Entrance Requirements.

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a grammar or high school are admitted upon certificate. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must



show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the two weeks previous to the opening of the evening school.

#### **Registration.**

Before entering the class a student must fill out an attendance card which can be obtained at the office or from the instructors in the various departments.

Any student who has filed an attendance card and who wishes to change his course must notify the office before making the change.

#### **Fees and Deposits.**

All evening courses are free to residents of Lowell. To those outside of Lowell the fee is \$10.00 per year for *each course of two nights per week*. Students taking two courses or attending courses requiring more than two nights per week are required to pay \$15.00 per year.

*All fees and deposits must be paid in advance.*

All students, whether from Lowell or not, taking course (a) Chemistry and Dyeing Department, are required to make a deposit of \$5.00 at the commencement of the course. A deposit of \$10.00 will be required of all students taking course (b), (c) or (d). This is to cover the cost of laboratory breakages, chemicals, apparatus, etc., and at the end of the year any unexpended balance is returned or an extra charge made for the excess breakage.

Every student who takes the Chemistry and Dyeing Course must check up his desk with the instructor of that department when he leaves the school. Any student not doing so will be charged 50 cents.

#### **Transportation.**

Free transportation is given students from Lawrence. A transportation blank can be obtained from the office and must be properly filled out by applicant and signed by the Superintendent

or Overseer of the department in which said applicant is employed. This blank must then be handed in to the office together with the tuition fee before trip ticket will be given student.

Any student who leaves school before the end of the term should return his trip ticket immediately upon leaving.

#### **Supplies.**

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause.

Student's supplies will be sold from the Store Room every evening school night from 7.00 to 7.45 p. m.

### **1. Cotton Spinning—2 Years**

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

#### **IIa. Woolen Spinning—2 Years**

#### **IIb. Worsted Spinning—3 Years**

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool the varying properties of the fibres, trade terms, sorting, scour-

ing, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

### **IIIa. Textile Design—3 Years**

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

### **IIIb. Freehand Drawing—3 Years**

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

### **IVa. Elementary Chemistry—2 Years**

General Chemistry including Inorganic and Organic Qualitative Analysis.

**IVb. Textile Chemistry and Dyeing—3 Years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.

**IVc. Analytical Chemistry—3 Years**

Laboratory Work and Lectures in Qualitative  
Analysis.

**IVd. Textile and Analytical Chemistry—4 Years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

**Va. Cotton Weaving—1 year**

**Vb. Woolen and Worsted Weaving—1 year**

**Vc. Dobby and Jacquard Weaving—1 year**

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of



the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

**Vla. Elements of Engineering—3 years**

**Vlb. Mechanical Drawing—3 years**

**Vld. Machine Shop Practice—2 years**

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as the time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes



in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

#### **VII. Woolen and Worsted Finishing—1 year**

In this course machine work is supplemented by lectures and discussions pertaining to the many finishes given to woolen and worsted fabrics. The action of soaps, water, steam, heat and cold upon wools in cloth or the combination of this fibre with others used in commerce is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics.

## OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

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This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

### OFFICERS

President :	Harry Buckley, Methuen, Mass.
Vice-President :	James Spurr, Jr., Lawrence, Mass.
Secretary and Treasurer :	Stephen W. Bastow, Nashua, N. H.

### BOARD OF CONTROL

President, Vice-President, Secretary, also John Nicoll, Andover, Mass., H. Stewart Redman, Manchester, N. H., Samuel Stott, Methuen, Mass., Samuel J. Nichol, Lowell, Mass.

For information regarding this association please apply to Stephen W. Bastow, Secretary, 90 Abbott St., Nashua, N. H.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

The recipient of this prize this year was Harold Elmore Gile of Lawrence, Mass.

## EVENING CLASS OF 1916

---

Certificates awarded as follows, April 12, 1916:

### COURSE Ia—2 YEARS. (Cotton Spinning)

George Emery Benson	Lowell, Mass.
Robert Herbert Burns	" "
Harold Malcolm Chicken	Lawrence, "
Harry James Hayward	" "
Richard Davis Hodgkins	Lowell, "
Gentaro Takahashi	" "
Charles Leslie Tucker	" "
William Wallace Tucker	" "

### COURSE Ia—3 YEARS. (Cotton Spinning)

David Pendlebury	Lawrence, Mass.
Eugene Snickers	Lowell, "

### COURSE IIb—3 YEARS. (Worsted Spinning)

Roy Alfred Playdon	Methuen, Mass.
--------------------	----------------

### COURSE IIIa—3 YEARS. (Textile Design)

Hammond Barnes	Lowell, Mass.
Frederic Stacey Gilley	Somerville, "
Francis Joseph Perron	North Andover, "
William Henry Rhodes	Ward Hill, "
David Patrick Sorenson	Dracut, "
Joseph Daniel Sullivan	Lowell, "

### COURSE IIIb—3 YEARS. (Freehand Drawing)

Thomas Joseph Campbell	Lowell, Mass.
Marie Alphonsine Charbonneau	" "
Julia Alice Guenard	" "
Elsie Laporte	" "
Isabella Grace Larue	" "

### COURSE IVa—2 YEARS. (Elementary Chemistry)

Winthrop Simpson Bean	Lowell, Mass.
Rupert Francis Billings	" "
Georges Amedee Bordeleau	" "
Frederick Alvin Bryden, Jr.	North Andover, "
John Joseph Burke	Lowell, "
Herschel Gilman Clough	" "
Elmer Rounds Coburn	Methuen, "
Leander Forest Conley	Lowell, "
George Edmund Crompton	" "
George Joseph Flathers	Lawrence, "
Churchill Gerry	Lowell, "
George Albin Gunther	Dracut, "

Harry Leaver	Methuen, Mass.
Tom Peel	North Andover, "
Alfred Quance	Methuen, "
Edwin Herbert Smith	Lawrence, "
Richard Edward West	Lowell, "

#### COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)

Harold Elmore Gile	Lawrence, Mass.
Harold Wainwright	" "

#### COURSE Va—1 YEAR. (Cotton Weaving)

Willis Henry Bowles	Lowell, Mass.
Edward James Gallagher	Quincy, "
George Quartus Rooston Haithwaite	Lowell, "
George Edwin Heeley	" "
Ernest Ingle	" "
James Albert Nelson	" "
Robert Rostron	" "
Fred Holt Taylor	" "

#### COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)

Walter Baxter	Methuen, Mass.
James Ernest Birdsall	Lawrence, "
Guy Eugene Branch	" "
John Bzowski	Lowell, "
Leon Guileaum Coolens	" "
William Keisling	North Andover, "
John Charles Lowe	Methuen, "
Louis Percival Saunders	North Andover, "
Patrick Francis Scully	Lowell, "
Miles Henry Smith	Lawrence, "

#### COURSE Vc—1 YEAR. (Dobby and Jacquard Weaving)

George Arthur Smart	Lowell, Mass.
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#### COURSE VIa—3 YEARS. (Elements of Engineering)

James Albert Cheetham	Lowell, Mass.
Walter Byron French	" "
Eugene Octave Gaudette	" "
Karl Sheppard Lunan	" "
Percy Allan McKittrick	" "
James Francis Spillane	" "
George Stewart	" "
Joseph Christopher Taff	" "
Joseph Waring	Methuen, "

#### COURSE VIb—3 YEARS. (Mechanical Drawing)

Carl William Galle	Lawrence, Mass.
Achille Gabriel Gaulin	Lowell, "
Thomas Andrew Hendricks	" "
Stanley Winfield Lund	Lawrence, "
Chester Laforest Mosher	Lowell, "
John Murphy	" "
Albert Shaw	" "
Harry Arthur Wiesberg	Lawrence, "

COURSE VI—2 YEARS. (Machine Shop Practice)

James Henry Brown	Forge Village, Mass.
Adolphe Desaillier	Lowell, "
George Eugene Fontaine	" "
Joseph John Higginbottom	" "
Joseph Davis Jubenville	" "
Lewis Doyle Lane	Lawrence, "
Abbott Lawrence	Lowell, "
John Lynch	Lawrence, "

COURSE VII—1 YEAR. (Woolen and Worsted Finishing)

Roland Monroe Gesing	Lawrence, Mass.
Alfred Joseph Gunning	Lowell, "
James McDermott	Methuen, "
Ernest Gunnar Noring	Lawrence, "
Walter Ernest Todd	Lowell, "

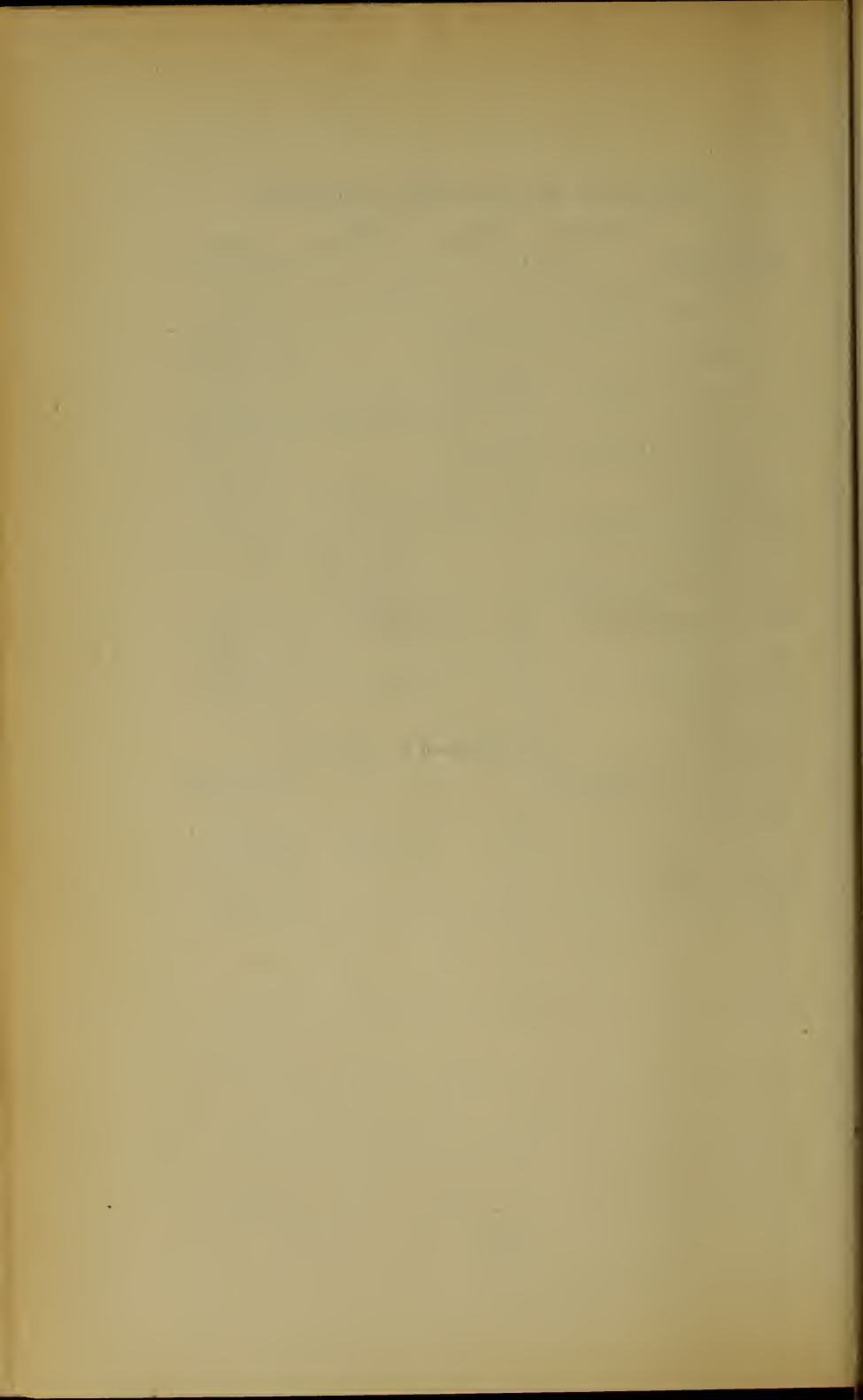


# Schedule of Evening Classes 1916-1917

	Monday	Tuesday	Thursday	Friday
COTTON SPINNING		Mr. Playdon.		Mr. Playdon
First year			Mr. Goodchild	
Second year	Mr. Goodchild	Mr. Smith	Mr. Smith	
Third year		Mr. Smith	Mr. Smith	
KNITTING				
WOOLEN SPINNING		Mr. Barker Mr. Howker	Mr. Barker Mr. Howker	
First year				Mr. Barker
Second year	Mr. Barker			
WORSTED SPINNING		Mr. Barker Mr. Howker	Mr. Barker Mr. Howker	
First year				Mr. Barker Mr. Lowe
Second year	Mr. Barker Mr. Lowe		Mr. Lowe	
Third year		Mr. Lowe	Mr. Lowe	
TEXTILE DESIGN- ING				Mr. Mackay
First year	Mr. Bachmann			
Second year		Mr. Bachmann	Mr. Mackay	
Third year		Mr. Mackay	Mr. Bachmann	
FREEHAND DRAW- ING			Miss Whitney Miss Merchant	
First year	Miss Whitney Miss Merchant			Miss Whitney Miss Merchant
Second year		Miss Whitney Miss Merchant		Miss Whitney Miss Merchant
Third year		Miss Whitney Miss Merchant		Miss Whitney Miss Merchant
ELEMENTARY CHEMISTRY				
First year		Dr. Smith	Dr. Smith	
Second year	Mr. Stoddard		Mr. Stoddard	Mr. Stoddard
TEXTILE CHEMIS- TRY AND DYEING				
First year	Prof. Olney	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth
Second year	Prof. Olney	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth
Third year	Mr. Sleeper Mr. Howarth	Mr. Sleeper Mr. Howarth	Prof. Olney	Mr. Sleeper Mr. Howarth
ANALYTICAL CHEMISTRY				
First year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard
Second year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard
Third year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard

## Schedule of Evening Classes 1916-1917

	Monday	Tuesday	Thursday	Friday
TEXTILE AND ANALYTICAL CHEM.				
First year	Prof. Olney	Mr. Brann		Mr. Stoddard
Second year	Prof. Olney	Mr. Brann		Mr. Stoddard
Third year	Mr. Sleeper	Mr. Sleeper Mr. Howarth	Prof. Olney Mr. Sleeper	Mr. Sleeper Mr. Howarth
Fourth year	Mr. Stoddard	Mr. Brann		Mr. Stoddard
COTTON WEAVING		Mr. Hoellrich		Mr. Hoellrich
WOOLEN & WORSTED WEAVING	Mr. Younger		Mr. Younger	
DOBBY & JACQUARD WEAVING	Mr. Hoellrich		Mr. Hoellrich	
MECHANICS	Mr. Davis		Mr. Davis	
STEAM ENGINEERING		Mr. Perkins		Mr. Perkins
ELECTRICAL ENGINEERING		Mr. Lupien		Mr. Lupien
MECHANICAL DRAWING				
First year		Mr. Woodward	Mr. Woodward	
Second year	Mr. Woodward			Mr. Woodward
Third year	Mr. Woodward			Mr. Woodward
MACHINE SHOP PRACTICE				
First year			Mr. Jack	Mr. Jack
Second year	Mr. Jack	Mr. Jack		
WOOLEN & WORSTED FINISHING	Mr. Stewart			Mr. Stewart



BULLETIN  
OF THE  
Lowell Textile School

LOWELL, MASS.

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*Issued Quarterly*

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1916 - 1917

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Entered August 26, 1902, at Lowell, Mass., as second class matter,  
under Act of Congress of July 16, 1894.

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*Moody Street and Colonial Avenue*

# The Textile School Graduate.

## What does he do?

The questions—"Does the Lowell Textile School guarantee positions to its graduates?"—What sort of positions do the graduates secure upon graduating?" are frequently asked by prospective students or by parents and friends of young men seeking a profitable field of employment for a life's work. The sole purpose of answering these questions at this time is not the main object of this bulletin, but to acquaint those contemplating a textile education with the openings immediately available to recent graduates.

The school does not guarantee a position to graduates, for the reason that in the past its students upon completing one of the regular courses have had little difficulty in finding work where they may use the training they have acquired. The school every year has assisted graduates who have just completed their school work, or who have been out in the industry one, two or more years, to find positions through the inquiries that are received by the school officers and teachers from manufacturers, commercial men and engineers. This last year has been no exception and more inquiries have been fruitless, because of the lack of available graduates, than perhaps ever before.

These inquiries have not in general been for those to fill temporary places that might be due to the present scarcity of labor, but have been made with an eye and plan for the future. "Preparedness" has demanded consideration in the manufacturing world, as much as in the political world. With this preparation for industrial expansion, or competition, whichever it may be, or both, the scientifically and technically trained mind is to be in demand, and there is to be, as there is at the present time, a demand for the well trained young man. This is particularly true in the textile industry and of young men, who by training and personal qualification, are ready to meet the call.

While we do not know at this date where all of the graduates from last year's class are employed, and exactly the kind of work they are doing, some have been heard from and it may be interesting and enlightening to those who contemplate following them to know what openings these recent graduates found.



One graduate from the four year Textile Engineering course, upon the close of his school work, entered the employ of a cotton mill manufacturing a wide variety of fancy colored cloths. His work takes him into every department of the mill following the material, that delay in shipment resulting from errors in manufacture may be avoided. To carry on work of this character successfully one must have an intimate knowledge of all the departments from the opener room to shipping platform, not omitting the office, the dye house or the power plant. Without a technical training it would be only after years of exceptional experience that one would be able to meet the requirements of this job, which cannot but lead to some higher managerial position. One here cannot do other than climb, for failure or inactivity means dismissal, while faithful work means promotion.

Another one of the recent graduates from this same course is at present in the employ of a firm of consulting Mill Engineers. Their interests include managing responsibilities of large cotton mills, and the future of this young man looks towards a career of either a manufacturer, or a consulting engineer, or both, the latter field following after some years' active experience as a manufacturer. His ability to quickly adapt himself to the requirements of either vocation and to make himself of some immediate value, is the result of his technical training that puts his mind into a condition to readily absorb information and apply it intelligently.

Two young men almost immediately upon receiving their degree of Bachelor of Textile Dyeing became located in the dyeing departments of textile mills. One, because of his evident knowledge of chemicals and dyestuffs that were used in the mill, was made purchasing agent of these supplies. A laboratory with suitable apparatus was provided that he might determine the relative standard and value of the materials purchased, thus acting as a protection to the firm, as well as an improvement in the economy and efficiency of the plant. The other graduate is engaged as an assistant chemist in the laboratory of a large worsted mill, where problems involving the purity and value of dyestuffs now on the market are studied and solved, as well as the great variety of chemical problems that arise in all woolen and worsted plants.

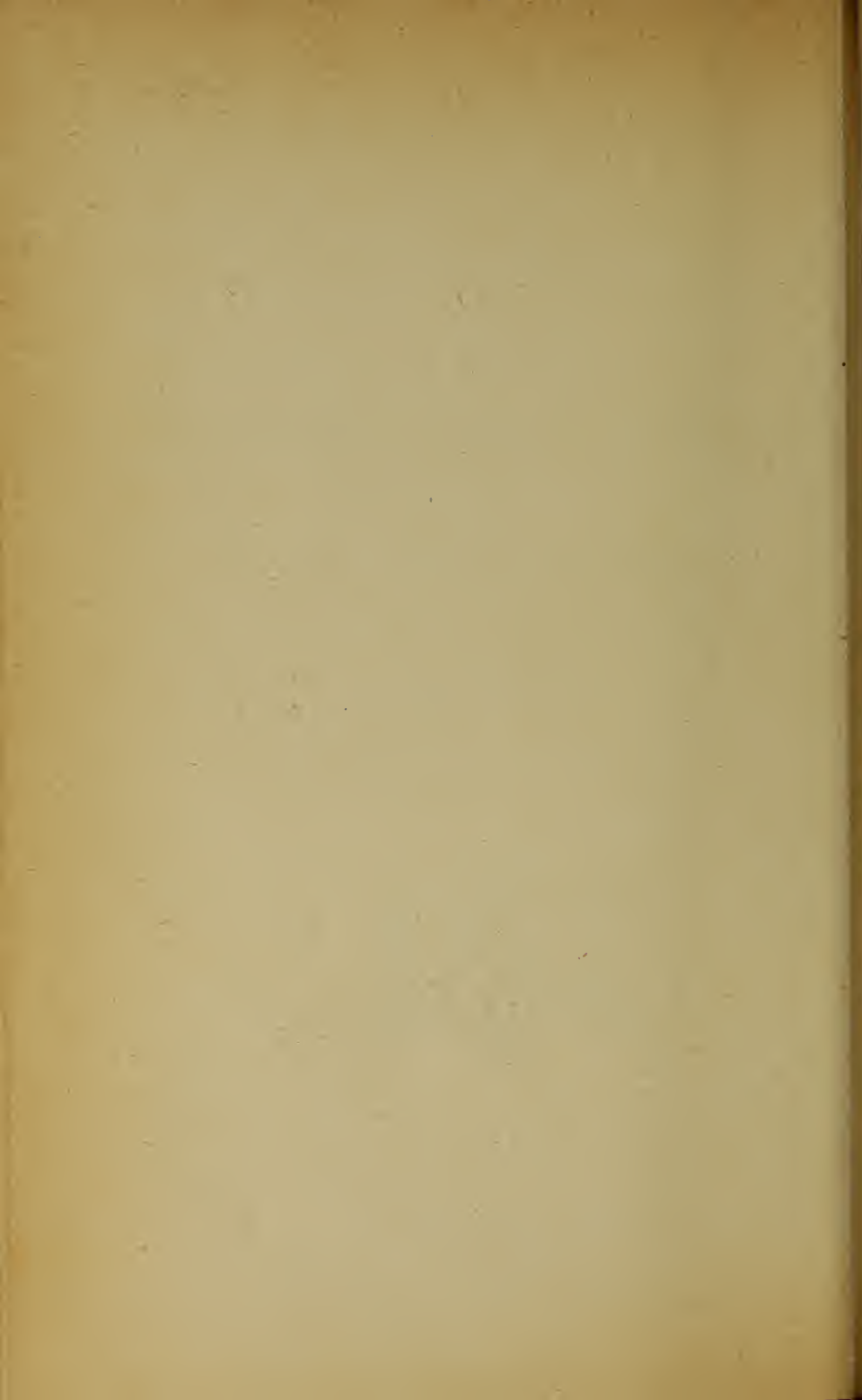
Of the recent graduates from the three year manufacturing courses, two at once upon leaving the school entered the employ of one of the largest, if not the largest, woolen and worsted corporation in this country. They have been assigned to different mills manufacturing different classes of goods, the object being to acquaint them with the special methods employed by each mill, to give the young men more extensive experience in yarn and cloth manufacturing, and to offer a broad practical school where the natural ability to apply previous technical training for the benefit of the corporation may have full opportunity to develop. From those who show the greatest promise are selected the men to manage and direct larger departments and plants of this corporation. By this process, which in many cases has been rapid, have a number of the graduates of the Lowell Textile School risen to the places of responsibility they now hold.

A third graduate from the same class is doing similar work in a mill of a corporation that has interests in both worsted and cotton fabric mills. This corporation realizing the value of trained young men for future managers has taken graduates from the school for the purpose of further development and observation, that proper selection may later be made. Another classmate of the above and a graduate from another course followed previous graduates to join the corps of efficiency observers and engineers of a large silk mill. This kind of preliminary work also leads later to places of management for those who know not only the process of manufacture but also how to carry on these processes in the most efficient manner are in line to direct others.

ANNUAL REPORT  
OF THE  
TRUSTEES  
OF THE  
LOWELL TEXTILE SCHOOL  
OF  
LOWELL, MASSACHUSETTS  
FOR THE YEAR ENDED  
JUNE 30, 1916



BUTTERFIELD PRINTING COMPANY  
LOWELL, MASS.  
1917



# Annual Report of the Trustees of the Lowell Textile School for the year ended June 30, 1916

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*To the Honorable Senate and House of Representatives of the  
Commonwealth of Massachusetts in General Court assembled.*

The Trustees of the Lowell Textile School of Lowell, Mass., respectively submit the following report for the year ending June 30, 1916, in compliance with chapter 248, Acts of 1904, which provides:—

SECTION 1. The trustees of every textile school receiving financial aid from the commonwealth shall, on or before the thirtieth day of January in each year, make to the general court a report containing a concise statement as to the buildings, equipment and resources of the school, the courses and methods of instruction, the number of teachers and students during the previous calendar year, and the number of teachers and students, if any, who graduated therefrom. The report shall also contain a statement verified by the oath of the treasurer of the school, and in such form as the auditor of accounts of the commonwealth shall prescribe, showing separately the amounts received during the previous calendar year from tuition fees, from the commonwealth, from any city or town, and from all other sources, and also showing the expenditures of the school during the same period, under the heads of maintenance, construction, and new equipment, and also the financial condition of the school at the close of said year.

Chapter 445, Acts of 1912, so amends the foregoing act as to change the fiscal year of textile schools from the calendar year to the school year. It reads as follows:—

SECTION 1. The fiscal year for which appropriations for textile schools shall be made and for which the treasurers of the said schools shall make their reports shall for the year nineteen hundred and thirteen begin on January first and continue to July first, nineteen hundred and fourteen; and thereafter the said year shall begin on the first day of July and shall continue until the first day of July of the succeeding year.

SECTION 2. So much of chapter two hundred and forty-eight of the acts of the year nineteen hundred and four and of chapter two hundred and eleven of the acts of the year nineteen hundred and five as is inconsistent herewith is hereby repealed.



## LOWELL TEXTILE SCHOOL

TRUSTEES OF THE LOWELL TEXTILE SCHOOL IN ACCOUNT WITH  
A. G. POLLARD, TREASURER, FOR YEAR ENDING JUNE 30, 1916.

## MAINTENANCE ACCOUNT

## Paid for—

Teachers .....	\$39,677.14	
Administration .....	6,879.72	
Employees .....	8,814.86	
General expense .....	8,069.15	
Supplies .....	6,267.54	
Power and light .....	7,131.24	
Special service .....	734.19	
Contingent .....	3,669.38	
Refund, chemistry department .....	1,219.50	
Rebate of tuition .....	143.20	
Reserve depreciation .....	2,803.80	
	<hr/>	\$85,409.71

## Deduct ledger debits as follows:—

## Cash received from—

Chemistry deposits .....	\$ 3,665.60	
Special service .....	989.91	
Books sold .....	2,781.41	
Stock sold .....	240.67	
Miscellaneous .....	420.00	
Interest .....	646.83	
	<hr/>	8,744.42

Net cost of maintenance, 1915-16 ..... \$76,665.30

## Cash received from—

Tuitions .....	\$17,904.72	
Commonwealth .....	50,000.00	
City of Lowell Evening tuitions .....	8,942.00	
	<hr/>	76,846.72
Surplus .....		<u>\$ 181.42</u>

## EQUIPMENT ACCOUNTS

*Chemistry and Dyeing Account*

Balance on hand June 30, 1915 .....	\$ 2,087.16	
Balance carried to general equipment account .....		\$ 2,087.16

*Finishing of Cotton Fabrics Equipment Account*

Balance on hand June 30, 1915 .....	\$ 954.48	
Balance carried to general equipment account .....		954.48

*Textile Testing Equipment Account*

Balance on hand June 30, 1915 .....	\$ 516.70	
Balance carried to general equipment account .....		516.70
		<u>\$ 3,558.34</u>

# LOWELL TEXTILE SCHOOL

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## General Equipment and Grounds

Balance on hand June 30, 1915 .....	\$ 4,560.62
Received from Commonwealth, chapter 63, Resolves of 1915 .....	15,000.00
Transferred from chemistry and dyeing, finishing and textile testing accounts .....	3,558.34
Total accountable for .....	\$23,118.96
Amount expended .....	18,025.59

Balance on hand June 30, 1916 ..... \$ 5,093.37

## SUMMARY OF RECEIPTS AND EXPENDITURES

	Received	Paid
Maintenance .....	\$76,846.72	\$76,665.30
Maintenance, deficiency last report brought for- ward .....		\$ 1,232.76
General equipment and grounds, from Common- wealth .....	\$15,000.00	
Balance last report .....	4,560.62	18,025.59
Balances of special appropriations per last report .....	3,558.34	
Cash on hand June 30, 1916 .....	-	4,042.03
	<u>\$99,965.68</u>	<u>\$99,965.68</u>

## FINANCIAL CONDITION JUNE 30, 1916

### Assets

Land .....	\$105,639.00	
Buildings .....	312,902.48	
		\$418,541.48
Machinery and other equipment .....		283,159.85
Supplies .....		15,814.00
Reserve fund for depreciation .....		4,903.66
General cash on hand June 30, 1916 .....		4,042.03
		<u>\$726,551.02</u>

### Liabilities

Notes payable on demand .....	50,000.00
Resources .....	<u>\$676,551.02</u>

## TRIAL BALANCE JUNE 30, 1916

	Dr.	Cr.
Lowell Textile School .....		\$669,033.51
Land .....	\$105,639.09	
Machinery .....	280,380.48	
Supplies .....	15,814.00	
Notes payable .....		50,000.00
Southwick Hall .....	142,120.30	
Kitson Hall .....	31,390.91	
Weave building .....	22,150.07	
Boiler house .....	45,472.80	
Weave wing extension .....	30,061.73	
Falmouth Street building .....	15,000.00	
Colonial Avenue building .....	21,985.41	
Reserve fund .....	2,211.75	
Cash .....	6,806.97	
	<u>\$719,033.51</u>	<u>\$719,033.51</u>

## LOWELL TEXTILE SCHOOL

## NOTES PAYABLE ON DEMAND

Dec. 31, 1914 .....	\$10,000.00
March 2, 1915 .....	10,000.00
May 8, 1915 .....	17,500.00
May 8, 1915 .....	12,500.00
	<u>\$50,000.00</u>

## SPECIAL BOOK PRIZE FUND ACCOUNT

Amount contributed by Prof. Louis A. Olney for  
prizes of books to honor students in chem-  
istry and dyeing:—

	Dr.	Cr.
Balance June 30, 1915 .....	\$61.28	
Amount received .....	9.00	
Amount expended .....		\$37.00
Balance June 30, 1916 .....		33.28
	<u>\$70.28</u>	<u>\$70.28</u>

## Graduates Book Fund

Balance on hand June 30, 1915 .....	\$30.00	
Amount received .....	30.00	
Balance on hand June 30, 1916 .....		\$60.00
	<u>\$60.00</u>	<u>\$60.00</u>

The above special funds are not included in the general account.

Approved as to form.

ALONZO B. COOK

*Auditor.*

*To the Trustees of the Lowell Textile School.*

This is to certify that I have examined the books of the treasurer of the Lowell Textile School for one year ending June 30, 1916, and find them to be correctly kept and properly vouched.

A. A. LUDWIG,

*Auditor of the Corporation.*

LOWELL, MASS., Jan. 8, 1917.

LOWELL, MASS., Jan. 8, 1917

I certify that the foregoing is a correct statement of the receipts and expenditures on account of the Lowell Textile School during the year ended June 30, 1916, and of the financial condition of the corporation at the close of said period.

A. G. POLLARD, *Treasurer,*  
*Trustees of the Lowell Textile School.*

LOWELL, MASS., Jan. 8, 1917.

MIDDLESEX, SS.

Subscribed and sworn to before me this day.

JOHN F. SAWYER,  
*Justice of the Peace.*

## STATEMENT OF LAND, BUILDINGS, EQUIPMENT, RESOURCES, ETC.

## LAND

Land bounded by Standish, Riverside and Moulton streets and Colonial Avenue and Merrimack River, about 14 acres ....	<u>\$105,639.00</u>
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## BUILDINGS

Southwick Hall: 80 by 265 feet; three stories, with two-story wings and finished basement under all; cost .....	\$142,120.30
Kitson Hall: 68 by 252 feet; one story and basement, and two additional floors of old boiler house, 63 by 68 feet .....	46,266.07
Falmouth Street building: 192 by 80 feet; three stories with sub-basement under head house; cost .....	67,211.80
Colonial Avenue laboratories: one story, 200 by 57 feet, and 60½ by 55 foot basement .....	21,985.41
New boiler and engine house, with coal pockets and subway ....	35,318.00
Total cost of buildings .....	<u>\$312,092.48</u>

The floor space is occupied as follows:—

Cotton yarns and knitting .....	Sq. Ft. 16,200
Woolen and worsted yarns .....	28,160
Decorative art .....	1,446
Textile design .....	15,360
Power weaving .....	15,360
Chemistry and dyeing .....	28,400
Finishing .....	10,606
Power plant .....	10,047
Mechanical and electrical engineering .....	24,297
Assembly and physical culture halls .....	10,800
Administration .....	2,930
Entrances, corridors, stairways, toilets, store, locker and lunch rooms .....	14,487
Total floor space .....	178,093
Cost per square foot of floor space .....	<u>\$1.74+</u>

## EQUIPMENT ACCOUNT

Cotton yarn department .....	\$ 37,884.43
Woolen and worsted yarn department .....	48,562.58
Textile design and power weaving department .....	34,405.44
Chemistry and dyeing department .....	30,144.39
Textile engineering department:	
Department proper .....	\$26,847.08
Power plant .....	15,643.46
Finishing department .....	42,490.54
Corridors .....	30,164.51
General Office .....	106.00
Principal's office .....	1,118.78
Trustees' room .....	808.75
Lecture Hall .....	881.40
	865.36

## LOWELL TEXTILE SCHOOL

Janitor's room .....	\$ 409.06
Lunch room .....	214.01
Storeroom .....	236.18
Library .....	3,159.13
Language department (room No. 67) .....	278.50
Students' room .....	1,089.50
Physical culture apparatus .....	549.77
Southwick Hall .....	11,495.79
Kitson Hall .....	1,503.11
Weave building and head house .....	4,663.02
Boiler house (old) .....	9,413.24
Boiler house (new) .....	6,141.91
Miscellaneous equipment .....	16,574.45
Total .....	\$283,159.85
The increase in the value of equipment is .....	\$ 14,754.45

## SUMMARY OF SUPPLIES ACCOUNT JUNE 30, 1916

Cotton yarn department .....	\$ 135.90
Woolen and worsted yarn department .....	831.40
Textile design and power weaving department .....	3,227.61
Chemistry and dyeing department .....	9,695.10
Textile engineering department, power plant .....	166.83
Finishing department .....	492.03
Office .....	179.72
Janitor's rooms .....	30.72
Storeroom .....	1,054.69
	\$ 15,814.00
The increase in the value of supplies is .....	\$ 236.56

COURSES OF INSTRUCTION  
CLASSIFICATION OF DAY STUDENTS BY COURSES

	First Year	Second Year	Third Year	Fourth Year
Cotton manufacturing .....	7	6	1	-
Wool manufacturing .....	9	7	3	-
Textile design .....	9	1	5	-
Chemistry and dyeing .....	26	23	11	5
Textile engineering .....	20	7	11	7
Special .....	1	-	-	-
Course not chosen .....	1	-	-	-
	73	44	31	12
Total .....	160			



## CLASSIFICATION OF EVENING STUDENTS BY COURSES

	First year	Second Year	Third Year	Post- graduate
Cotton spinning .....	39	19	5	—
Knitting .....	7	—	—	—
Woolen and worsted spinning .....	43	9	1	—
Designing .....	54	21	9	—
Freehand drawing .....	51	18	5	2
Elementary chemistry .....	53	28	—	—
Textile chemistry and dyeing .....	9	4	2	—
Analytical chemistry .....	11	3	—	—
Cotton weaving .....	18	—	—	—
Woolen and worsted weaving .....	16	—	—	—
Dobby and Jacquard weaving .....	1	—	—	—
Mechanics .....	153	—	—	—
Steam engineering .....	—	24	—	—
Electricity .....	—	—	19	—
Mechanical drawing .....	82	24	15	—
Machine shop .....	55	16	—	6
Woolen and worsted finishing .....	8	—	—	—
Mathematics .....	28	—	—	—
	628	166	56	8
Total .....				858
Names counted twice .....				57
Net total .....				801

## NUMBER OF STUDENTS

Day classes .....	160
Evening classes .....	801
Total .....	961
Graduated:—	
Day classes .....	18
Evening classes .....	90
Total .....	108

## TEACHERS

## NUMBER BY DEPARTMENTS

*Day and Evening Classes*

Cotton Yarn .....	3
Woolen and worsted yarn .....	3
Textile designing and weaving .....	6

Chemistry and dyeing .....	6
Textile engineering .....	6
Finishing .....	2
Language and history .....	1
Physical culture .....	1

Total .....	28
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*Evening Classes Only*

Cotton yarn .....	1
Textile design and weaving .....	2
Textile engineering .....	1

Total .....	4
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Average number of students per teacher .....	34
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### ROSTER OF SCHOOL OFFICERS AND INSTRUCTION CORPS.

#### PRINCIPAL

Charles H. Eames, S.B., Massachusetts Institute of Technology, 1897. Member of American Institute of Electrical Engineers. Experience: secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Company, Lowell, Mass., and engineer with Stone & Webster, electrical engineers, Boston, Mass.

#### INSTRUCTORS

##### *Textile Engineering*

George H. Perkins, S.B., chief instructor. Massachusetts Institute of Technology, 1899. Associate member American Society of Mechanical Engineers. Experience: draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood, Greene & Co., Boston, Mass.

Herbert J. Ball, S.B., instructor in mechanical engineering, efficiency and cost finding. Massachusetts Institute of Technology, 1906. Experience: draftsman, Watertown Arsenal, Watertown, Mass.; Lincoln & Williams Twist Drill Company, Taunton, Mass.

Ulysses J. Lupien, S.B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

Alexander D. Davis, B.T.E., instructor in mechanical drawing. Lowell Textile School, 1914. Experience: Lowell Machine Shop; Lowell Bleachery; Boott Mills, Lowell, Mass.; instructor in Textile School, South Manchester, Conn.

Charles H. Jack, instructor in machine-shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

Edgar L. Woodward, S.B., instructor in mechanical drawing, evenings only. Massachusetts Institute of Technology, 1911. Experience: schedule man, Boston & Maine Railroad, Billerica shop, North Billerica, Mass.

##### *Chemistry and Dyeing*

Louis A. Olney, S.B., M.S., chief instructor. Lehigh University, 1896. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

Robert R. Sleeper, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday & Sons, Limited, New York City; H. A. Metz & Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.

Howard D. Smith, Ph. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor, Brown University and Tufts College; instructor, Beloit College.

Russell B. Stoddard, A. B., instructor in chemistry. Clark College, 1912.

Bertrand F. Brann, M. S., instructor in chemistry. Massachusetts Institute of Technology, 1912; University of Maine, 1909. Experience: instructor, Massachusetts Institute of Technology; assistant instructor, University of Maine.

George O. Richardson, assistant instructor in dyeing. Lowell Textile School, 1916.

### *Textile Design and Weaving*

Hermann H. Bachmann, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the city of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company and Smith Webbing Company, Pawtucket, R. I.

Stewart Mackay, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.

Joseph Wilmot, instructor in power weaving and warp preparation. Lowell Textile School, 1908. Experience: United States Bunting Company, Lowell, Mass.; Draper Company, Hopedale, Mass.; Crompton & Knowles Loom Works, Worcester, Mass.

Andrew Younger, instructor in power weaving and warp preparation. Lowell Textile School, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Company, Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woollen Company, Dedham, Mass.; C. A. Root Manufacturing Company, Uxbridge, Mass.

Elizabeth Whitney, instructor in freehand drawing, evenings only. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching.

Edith C. Merchant, instructor in freehand drawing, evenings only. Normal Art School, Boston, 1908. Experience: teaching, Evening Drawing School, Lowell, Mass.; supervisor of drawing, Pepperell, Mass.

### *Cotton Yarns*

Stephen E. Smith, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Lowell Machine Shop, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

Louis C. Playdon, instructor in cotton spinning. Lowell Textile School, 1914. Experience: Atlantic Mills, Lawrence, Mass.; Pacific Mills, Lawrence, Mass., and Dover, N. H.

George Goodchild, instructor in cotton yarns, evenings only. Lowell Textile School, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; DeLamar Copper Company, Chrome, N. J.

### *Woolen and Worsted Yarns*

Edgar H. Barker, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.

John H. Howker, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from city and guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Me.; Arlington Mills, Lawrence, Mass.

John C. Lowe, instructor in woollen yarns. Lowell Textile School, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

*Finishing*

- Arthur A. Stewart, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Canada; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.
- C. Leonard Glen, instructor in finishing. Experience: Dunnell Manufacturing Company, Pawtucket, R. I.; United States Finishing Company, Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

*Cultural Course—Languages*

- Lester H. Cushing, A. B., Harvard College, 1911. Experience: Lowell Textile School, Lowell, Mass.

*Cultural Course—Physical Culture*

- Ralph E. Guillo, physical director. International Y. M. C. A. Training School, Springfield, Mass., 1910. Ten years' experience in physical culture in various schools and institutions.
- Archibald R. Gardner, M. D., medical adviser. Harvard University, 1902.

The following changes in the roster of teachers is noted:—

Alexander D. Davis, B.T.E., 1915, instructor in mechanical drawing, *vice* David M. Hunting, resigned.

Edgar L. Woodward, evening instructor in mechanical drawing, *vice* Marcus J. Cole, resigned.

Edith C. Merchant was appointed evening instructor in free-hand drawing, this school having taken over the public evening drawing school.

Louis C. Playdon, instructor in cotton spinning, *vice* Henry K. Dick, resigned.

C. Leonard Glen was appointed instructor in finishing.

The number of day students was 160, an increase of 23 per cent. The freshman or entering class increased 46 per cent.

The number of evening students was 801, an increase of 10+ per cent.

One hundred and nine cities and towns were represented on our rosters.

See Appendix tables for residence, previous education and occupation of students.



## POSITIONS HELD BY DAY GRADUATES

Directors of textile schools .....	2
Teachers .....	12
Mill vice-presidents .....	2
Mill treasurers and agents .....	11
Mill superintendents .....	20
Mill assistant superintendents .....	10
Mill foremen of departments .....	10
Assistant to superintendent .....	1
Mill auditors and accountants .....	3
Mill clerks .....	2
Second hands .....	7
Managers .....	20
Textile designers and fabric experts .....	18
Purchasing agents .....	1
In commission houses .....	4
Salesmen .....	9
Chemists, dyers and chemical salesmen .....	64
In government employ .....	7
In State employ .....	1
Textile manufacturing, unassigned .....	23
Industrial engineering .....	17
Mill engineering .....	12
Civil engineering .....	1
Electricians .....	2
Paymasters .....	1
Trade journalists .....	3
In business, textile distributing or incidental thereto .....	10
Other business .....	17
Employment not known .....	19
Students .....	2
Married women .....	3
Not employed .....	2
Deceased .....	8
Total .....	324

## METHODS OF INSTRUCTION

Instruction is first given in the principles of the sciences applicable to the textile and textile machinery industries, followed by instruction in the practical art,—the application of such sciences to the processes and machinery of manufacture.

Day instruction offers five courses of three or four years, as the student may elect, namely, cotton manufacturing, wool manufacturing, textile design,—including weaving and finishing,—chemistry and dyeing, and textile engineering.

All freshmen in the day classes during the first half year receive the same general instruction. At the beginning of the second half they are expected to choose one of the regular day courses. Each course, however, in addition to the specialty indicated by its name, includes some features of every other course, as such instruction, it is found, adds to the efficiency of the pupil by giving added breadth in the line he has chosen.



While there are several regular courses offered, they may be generally grouped in three grand divisions, namely, textile engineering, chemistry and dyeing, and textile design.

Textile engineering includes the mechanism of all the machinery used in every department of the school, and also machine-shop practice; and instruction in the generation, transmission and application of power, whether steam, hydraulic, electrical or gas. In boiler and engine testing, for which a complete and modern laboratory is provided, the pupils are called upon to make, or are afforded opportunities for conducting, continuous twenty-four-hour tests, boiler or plant tests, etc. This division also includes mill construction of all modern types, viz., steel, concrete masonry brick and wood, and combinations of both, involving the laying out of plants, selection and management of machinery, shafting, etc.; the use of the transit in surveying; mechanical drawing; and the plans for and the construction of equipment. The pupil is first thoroughly grounded in the principles of mechanical, electrical and hydraulic engineering before attempting the more advanced and specialized problems. The higher mathematics form an important part of the work of this department. The subject of physics lays the foundation upon which are built the courses in electricity, hydraulics and mechanics, and it also finds application in the testing of fibers, yarns and fabrics. The plans for the school buildings are prepared in this department, and all construction is superintended during the summer vacation by the engineers and pupils, who may remain for practical experience in this line of work.

Chemistry and dyeing involves a thorough course in chemistry, followed by an applied course, first in the laboratories, and finally on commercial vats, presses, kiers, driers, etc., in dealing with raw stock, yarns and fabrics. A special and growing branch is the making of dyes from minerals, vegetables, oils, etc. A special laboratory is equipped for testing coal and oil.

Textile design includes, first, instruction in color, conventionalizing of nature forms, historic ornament, etc., fundamental to all branches of decorative art; second, the application thereof to textiles. Included under this head is all fabric weaving and finishing.

Incidental to these general divisions is instruction in English, German, French and physical culture, to which it is desired to add Spanish and Portuguese to meet a demand from textile

commission and selling houses in cultivating South American markets.

For evening instruction the day courses are subdivided into sixteen courses. These courses are arranged to cover substantially the same subject-matter as the day courses, but are planned to meet the demand of those who wish instruction in special branches and who do not necessarily wish to pursue as complete a course as do those who attend the day classes. If an evening student wishes to cover the same subjects as are offered in the day classes, he may do so, and can attain a diploma by satisfactorily passing the necessary examination.

Unlike most schools the same instructors serve day and evening, thus insuring to the evening pupils from the mills and shops the same able and thorough instruction as the day pupils. The working hours are substantially mill hours or twice the number required of instructors at high schools, academies and colleges.

It has for some years been growing more and more evident that our instructors and pupils were being overworked, and were not given sufficient time in a three-year course to deal with some advanced specialties. A postgraduate course was established to relieve the situation, for which has been substituted a regular four-year course with the offer of degrees, as recommended by the State Board of Education, in textile engineering (B.T.E.) and textile dyeing (B.T.D.), the school thus passing from the technical to the technological class as originally intended. More time will thus be given to present features of the curriculum and advanced work, to which are added scientific mill management, cost finding, mill accounting, general corporation organization, commercial law and usage, patent laws and practice, principles of banking, etc., useful and essential to our graduates as they advance to positions of responsibility in the textile industry.

Most of our day pupils matriculate directly from the high schools or academies. So thorough is their instruction that they graduate directly into employment in the industry or kindred lines, and, as they rapidly advance to the higher responsibilities, they need instruction that the school has lacked time to impart. Hence, in addition to the technique of the industry is now included instruction incidental but essential to the positions they occupy or to which they aspire. At some technical schools and colleges it is sought to meet this need by recommending prescribed courses in reading after graduation; but this, being optional with

the graduate, may or may not be given attention. By limiting these subjects to essentials and making them obligatory, it is thought the pupils will more certainly be benefited.

The scientific method in mill management—with special reference to “efficiency or production engineering” as presented by Taylor, Gantt, Gilbreth, Emerson, Gunn, Richards, Cooke, Patterson and others, mostly of the eminent Society of Mechanical Engineers—and cost finding are leading features of the fourth year now added to the three-year course in textile engineering, competent instructors having been secured.

The published works of these engineers, or papers specially prepared by them for this school, have been furnished the fourth-year pupils; and when they are grounded in the principles of this scientific method of management, they are instructed in the methods of applying them to textile processes, and are then required to pass an examination therein.

Mindful that pragmatism, as expounded by the late Professor James of Harvard, may, from the standpoint of economics, be summed up in this, that a theory is valuable only as it is found useful in application, or, more homely expressed, “the proof of the pudding is in the eating,” approved efficiency literature is sent out to our graduates, already filling a great variety of positions, with the request that they use their eyes and brains and give us the benefit of their criticism and the problems they meet with from their various standpoints of supervision in practical manufacture.

Nearly all of the graduates go to positions that make it most important that they be fully instructed as to the latest improved methods of dealing with labor; and thoroughly trained as they are at the school in the make-up, installation and operation of machinery, they should be exceptionally capable of testing the various efficiency systems proposed. Papers already received from those in employment and from their employers indicate that “efficiency or production engineering” has a useful place in the textile industry, and will, when fully applied to all departments of a mill, result in as great benefits to employees and employers alike as has resulted in its application at the shops.

Eminent efficiency engineers are gradually being called to textile mills, and there is a steadily growing demand by them for our thoroughly trained graduates, to fill the various staff and



division positions required to carry out their instructions as they install features of scientific efficiency methods of dealing with labor. From such staffs it is expected will eventually come an able body from which to draw managers of production. The number of graduates called for by efficiency engineers is steadily increasing. It is gratifying to notice that these calls are generally from the largest and most successful mills.

The rapid application of electricity to textile machinery and processes calls for an extension of our electrical equipment, and the necessary equipment is being installed. Fiber, yarn and fabric testing, which are such prominent features of foreign schools, have already been provided for. A complete equipment of cotton finishing machinery is now in place. These additions to the plant have not yet involved any addition to our corps of instructors.

#### CORPORATION SUPERVISION

An annual meeting is held in January for the election of officers, reception of annual reports and the transaction of such other business as may be proposed, not committed to the Board of Directors. Frequent special meetings of the trustees at the school, sitting as a Board of Directors, are provided for. They appoint such agents, school officers and teachers as they find necessary, prescribe their duties and fix their compensation. The president (in his absence the vice-president) presides at all the meetings of the corporation and Board of Directors, and performs such other duties and exercises such other authority as the corporation or Board of Directors may from time to time devolve on him. The treasurer is charged with the general care of the pecuniary affairs and concerns of the corporation, and he receives all revenues and makes all authorized disbursements. He is required to report the receipts and expenditures and financial condition quarterly to the Board of Directors and annually to the corporation. He is also to execute all contracts made by express authority of the corporation or Board of Directors and approved by the president. The president, clerk, treasurer and two elected trustees compose a finance committee, which passes upon all orders for expenditures and inspects all bills before payment. No expenditure is authorized or liability incurred in excess of money available to meet it, except by vote of the Board of Directors at a meeting in the call for which due notice of the

nature of such proposed expenditure or liability is given. The clerk is required to keep a record of all regular and special meetings of the corporation and Board of Directors, notify all members of such meetings seven days in advance, and perform such other duties as the corporation or Board of Directors may require of him. He is a resident trustee, devoting his time to development work.

In addition to the finance committee there are general committees of ways and means, building and legislative, and lectures. There is also a subcommittee for each department of the school, composed, as far as is practicable, of trustees identified in manufacturing with the specific branch of industry to which their department relates. They are to make recommendations to the Board of Directors as to the needs, etc., of their respective departments, and especially as to the new equipment, floor space, etc., and to perform such other duties as the directors may require of them.

The principal of the school is charged with its conduct, and is directly accountable to the Board of Directors, making monthly reports thereto and such recommendations and special reports as to efficiency, discipline, etc., as in his judgment are required.

#### TOTAL RECEIPTS OF THE LOWELL TEXTILE SCHOOL FROM ORGANIZATION TO JUNE 30, 1916.

##### FOR THE PLANT, INCLUDING LAND, BUILDING AND EQUIPMENT

From the Commonwealth .....	\$318,331.66
From other sources—manufacturers and others .....	398,866.97
Excess of outside contributions .....	<u>\$ 80,535.31</u>

##### FOR MAINTENANCE

From the Commonwealth .....	\$590,500.00
From city of Lowell .....	\$173,546.00
From earnings (pupils' fees) .....	236,809.03
	<u>410,355.03</u>
Excess of Commonwealth contributions .....	\$180,144.97

##### AVERAGE CONTRIBUTIONS FOR ALL PURPOSES

From Commonwealth brought down:—

For plant .....	\$318,331.66
For maintenance .....	590,500.00

Total Commonwealth contribution .....	\$908,831.66
---------------------------------------	--------------



From other sources:—

For plant .....	\$398,866.97	
For maintenance .....	410,355.03	
		<u>809,222.00</u>
Excess of contributions by Commonwealth for all purposes .....		<u>\$ 99,609.66</u>

#### APPROPRIATIONS FOR 1917-18.

We have petitioned for the following appropriations from the State treasury for the fiscal year beginning July 1, 1917:—

For maintenance .....	\$50,000.00
For construction, to give additional floor space .....	34,125.00
For grounds .....	1,000.00

For maintenance we ask the same amount we have received annually the last two years, although in some items, such as coal, material and other supplies and labor, prices are still rising. We met a deficiency under this head in the year 1914 and 1915 of \$1,232.70, and had a surplus of \$181.42 in 1915-1916. It does not seem wise to decrease this annual allowance at this time.

We have explained at length in our petition why the appropriation for construction is needed. The extraordinary demand for mechanics from the manufacturers of munitions, as also the remarkable increase in the automobile industry, has created such a dearth of them in the other industries as to cripple other normal industries seriously, and this is especially felt in the textile machine shops and mill repair shops. Much machinery is standing idle in consequence, and it now requires years to fill our orders when in normal times it required but weeks. At the same time we have a large waiting list of bright youths, who wish to qualify in the evening as mechanics, working in the mills and shops for a mere pittance. We have not floor space for them,—and we only ask for that, as we believe the other items of expense will be met from increased tuition.

See Appendix for the residence of day and evening students, previous education and present occupation.

Respectfully submitted,

TRUSTEES OF LOWELL TEXTILE SCHOOL,

A. G. CUMNOCK,  
*President.*

JAMES T. SMITH,  
*Corporation Clerk.*

LOWELL, MASS., Jan. 27, 1917.

## APPENDIX

## RESIDENCE OF DAY STUDENTS

Adams, Mass. ....	1	Newton Upper Falls, Mass. ....	1
Andover, Mass. ....	1	North Andover, Mass. ....	1
Amherst, Mass. ....	1	North Billerica, Mass. ....	1
Arlington, Mass. ....	2	North Tewksbury, Mass. ....	1
Attleboro, Mass. ....	1	Norwood, Mass. ....	1
Ayer, Mass. ....	2	Roxbury, Mass. ....	2
Beverly, Mass. ....	2	Salem, Mass. ....	1
Billerica, Mass. ....	3	Shrewsbury, Mass. ....	1
Boston, Mass. ....	7	Somerville, Mass. ....	1
Bradford, Mass. ....	2	South Essex, Mass. ....	1
Cambridge, Mass. ....	1	Uxbridge, Mass. ....	1
Charlton City, Mass. ....	1	Wakefield, Mass. ....	2
Cochituate, Mass. ....	1	Wamesit, Mass. ....	1
Concord, Mass. ....	1	Ware, Mass. ....	1
Dorchester, Mass. ....	4	Wayland, Mass. ....	1
Dracut, Mass. ....	1	Webster, Mass. ....	1
East Acton, Mass. ....	1	Weston, Mass. ....	1
East Bridgewater, Mass. ....	1	West Concord, Mass. ....	1
East Northfield, Mass. ....	1	Whitman, Mass. ....	1
East Weymouth, Mass. ....	1	Winchester, Mass. ....	5
Everett, Mass. ....	3	Woburn, Mass. ....	2
Fall River, Mass. ....	1	Worcester, Mass. ....	1
Fitchburg, Mass. ....	1	Connecticut ....	2
Franklin, Mass. ....	1	Illinois ....	2
Great Barrington, Mass. ....	1	Maine ....	6
Greenwood, Mass. ....	1	New Hampshire ....	12
Groton, Mass. ....	2	New Jersey ....	2
Haverhill, Mass. ....	3	New York ....	2
Hudson, Mass. ....	1	Rhode Island ....	2
Huntington, Mass. ....	1	Virginia ....	1
Lawrence, Mass. ....	9	Brazil ....	1
Lexington, Mass. ....	2	China ....	1
Lowell, Mass. ....	33	Japan ....	2
Malden, Mass. ....	1		
Melrose, Mass. ....	2	Total .....	160
Newburyport, Mass. ....	1		

## PREVIOUS EDUCATION OF DAY STUDENTS

High school or preparatory school .....	144
College .....	15
Grammar school .....	1
Total .....	160

RESIDENCE OF EVENING STUDENTS

Andover, Mass. ....	12	North Chelmsford, Mass. ....	7
Ballard Vale, Mass. ....	3	Quincy, Mass. ....	1
Bedford, Mass. ....	1	Roslindale, Mass. ....	1
Boston, Mass. ....	1	Roxbury, Mass. ....	2
Brookline, Mass. ....	1	Shirley, Mass. ....	1
Chelmsford, Mass. ....	3	Somerville, Mass. ....	4
Dracut, Mass. ....	3	Tewksbury, Mass. ....	2
Forge Village, Mass. ....	1	Ward Hill, Mass. ....	1
Haverhill, Mass. ....	2	West Chelmsford, Mass. ....	1
Lawrence, Mass. ....	122	West Newton, Mass. ....	1
Lowell, Mass. ....	564	Winchester, Mass. ....	2
Malden, Mass. ....	1	Winthrop, Mass. ....	1
Medford, Mass. ....	1	Nashua, N. H. ....	4
Methuen, Mass. ....	36	Pelham, N. H. ....	1
North Andover, Mass. ....	15		
North Billerica, Mass. ....	6	Total .....	801

PREVIOUS EDUCATION, EVENING STUDENTS

High school (day) .....	250
High school (evening) .....	64
Grammar school .....	374
College .....	29
Normal school .....	3
Technical school .....	6
Textile school .....	14
Commercial school .....	16
Industrial school .....	27
Preparatory school .....	10
Evening drawing school .....	4
School of design .....	4
Total .....	801

OCCUPATION OF EVENING STUDENTS

Apprentice .....	24	Checker .....	1
Assistant superintendent .....	3	Clerk .....	50
Back boy .....	3	Cloth examiner .....	5
Bank clerk .....	1	Chain builder .....	6
Beamer .....	2	Cobbler .....	1
Bleacher .....	1	Cartridge maker .....	1
Blacksmith .....	2	Compositor .....	1
Bobbin boy .....	2	Colorist .....	4
Boiler maker .....	1	Cost clerk .....	2
Bookkeeper .....	3	Cotton classer .....	1
Box maker .....	1	Designer .....	2
Butcher .....	1	Draftsman .....	20
Carpenter .....	5	Dressmaker .....	3
Chauffeur .....	4	Dyer .....	8
Chemist .....	6	Drug salesman .....	1

OCCUPATION OF EVENING STUDENTS—*Concluded*

Efficiency clerk .....	4	Pattern weaver .....	8
Electrician .....	15	Paymaster .....	1
Engineer .....	7	Percher .....	7
Engraver .....	1	Pentagrapher .....	1
Farmer .....	3	Polisher .....	1
Finisher .....	2	Printer .....	2
Fireman .....	2	Quiller .....	2
Fixer .....	8	Rodman .....	1
Florist .....	1	Runner .....	2
Foreman .....	12	Rubber worker .....	1
Gardener .....	2	Salesman .....	6
Glazier .....	1	Schedule clerk .....	1
Grinder .....	2	Saw filer .....	1
Gas inspector .....	3	Second hand .....	29
Helper .....	18	Shipping clerk .....	6
Inspector .....	4	Shoemaker .....	16
Iron worker .....	2	Sign writer .....	2
Janitor .....	1	Sketch maker .....	1
Knitter .....	5	Spinner .....	6
Laboratory assistant .....	2	Steamhtter .....	1
Laborer .....	11	Stitcher .....	5
Leather dyer .....	1	Stenographer .....	5
Leather worker .....	5	Steel worker .....	1
Life insurance agent .....	1	Stocking sizer .....	1
Loom fixer .....	15	Student .....	66
Looper .....	5	Superintendent .....	1
Machine inspector .....	1	Teacher .....	3
Machine erector .....	1	Teamster .....	2
Machinist .....	78	Tester .....	2
Machinist's helper .....	22	Third hand .....	6
Machine printer .....	1	Timekeeper .....	1
Mail carrier .....	1	Tool maker .....	8
Manager .....	4	Traveling salesman .....	1
Master mechanic .....	1	Unemployed .....	20
Mechanic .....	2	Utility man .....	1
Mill clerk .....	59	Velvet cutter .....	1
Mill treasurer .....	1	Warp twister .....	1
Nurse .....	1	Weaver .....	20
Oiler boy .....	4	Winder .....	2
Office boy .....	4	Woodworker .....	2
Operative .....	55	Wool sorter .....	5
Overlooker .....	1	Yarn boy .....	8
Packer .....	2		
Painter .....	3	Total .....	801
Pattern dresser .....	1		

TRUSTEES OF THE LOWELL TEXTILE SCHOOL, 1915-16.

(Incorporated, 1895)

HONORARY TRUSTEES

FREDERICK FANNING AYER, Esq., New York City  
CHARLES H. HUTCHINS, President, Crompton & Knowles Loom Works

THE CORPORATION OFFICERS

A. G. CUMNOCK, *President*                      JAMES T. SMITH, *Clerk*  
HON. JOHN JACOB ROGERS, *Vice-President*    A. G. POLLARD, *Treasurer*

TRUSTEES

On the Part of the Commonwealth of Massachusetts

Ex officiis

His Honor CALVIN COOLIDGE,                      DR. PAYSON SMITH,  
Lieutenant Governor.                      Commissioner of Education

Appointed by the Governor and Council

FREDERICK A. FLATHER, Lowell, 1916.      JOHN T. DONEHUE, Lowell, 1918.  
Treasurer, Boott Mills.

On the Part of the City of Lowell

Ex officiis

HON. JAMES E. O'DONNELL,                      HUGH J. MOLLOY,  
Mayor of Lowell.                      Superintendent of Public Schools

WILLIAM W. DUNCAN  
President, Municipal Council

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

PERMANENT TRUSTEES

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston corporation, mills at Lowell.  
EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.  
ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.  
FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.  
HON. FREDERICK LAWTON, Boston, Justice, Superior Court.  
JAMES T. SMITH, Lowell, Attorney-at-Law.  
WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston corporation, mills at Lawrence.  
WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.  
GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.  
FRANK E. DUNBAR, Lowell, Attorney at Law, and President, Appleton Company, Boston corporation, mills at Lowell.



- HENRY A. BODWELL, Andover, Superintendent, Smith & Dove Manufacturing Company, class of 1900.
- WILLIAM E. HALL, Lowell, Treasurer, Shaw Stocking Company.
- WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.
- CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston corporation, mills at Lowell.
- HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.
- WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston corporation, mills at Lowell.
- EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston corporation, mills at Lowell.
- ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.
- T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.
- REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.

**Additional Trustees elected by Alumni under Act of 1905**

- For term ending June 30, 1916: DEXTER STEVENS, class of 1904, Superintendent, Esmond Mills, Esmond, R. I.
- For term ending June 30, 1917: ARTHUR C. VARNUM, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.
- For term ending June 30, 1918: EDWARD M. ABBOT, class of 1904, Vice-President and Agent, Abbot Worsted Company, Graniteville, Mass.
- For term ending June 30, 1919: EDMUND A. LUCEY, class of 1904, Efficiency Engineer with H. L. Gantt, New York City.

# LOWELL TEXTILE SCHOOL

## LOWELL, MASS.

Appendix to Bulletin No. 3, February 1917

(Reprint from the Textile World Journal)

New York, March 3, 1917.

## The Field for the Textile Engineer

Industry Needs Men of Broad Training, Supplemented by Practical Experience—Opportunities

By GEORGE H. PERKINS, S. B.

Head of Textile Engineering Department

Lowell Textile School

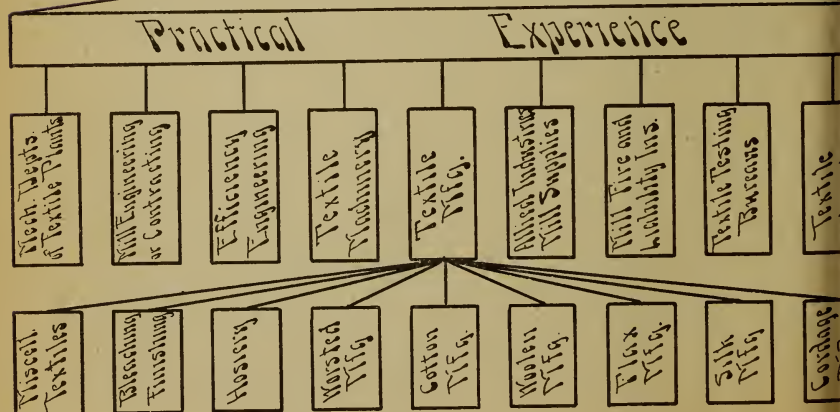
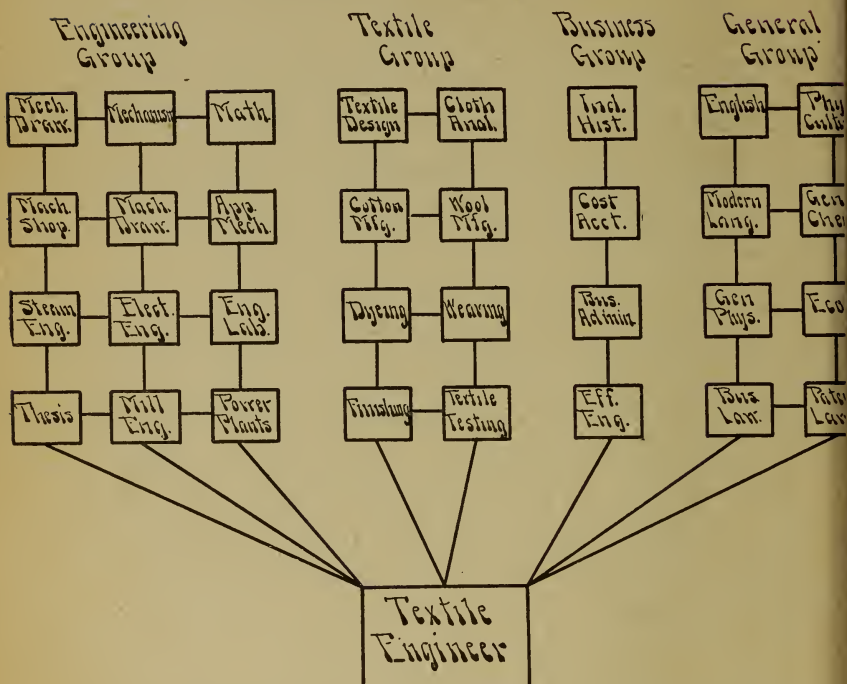
The standards of an industry are set and maintained by those constituting its leadership. The excellence of such standards may be gauged to some degree by the extent to which the industry attracts and absorbs men of the highest type and most adequate technical training. The day has passed when any industry can keep pace with modern progress wholly by dependence upon those exceptional men who by sheer force of natural ability will always make their way to the top. The supply of such men never equals the demand and ability must be supplemented by thorough technical and practical training in specialized schools.

### BASIS FOR FUTURE DEVELOPMENT

No industry should be satisfied with anything less than the best talent procurable. The electrical industries furnish one of the best examples of the effectiveness of the use of large numbers of technically trained engineers, and we would be reluctant to admit that the problems of the textile industry demand any lesser abilities, although this view has been somewhat prevalent.

While the textile industry, as well as many others, is based upon the pioneer work of many men of limited training and opportunities, the future development of all rests largely in the hands of the scientifically trained engineer. New discoveries, new uses and combinations of fibers, which are constantly presenting themselves, make modern textile manufacturing a proposition of most intensive character. The tremendous extent and scope of the textile industry would appear to present an almost unlimited field for technical activity, and yet this industry has been rather slower than some others to take advantage of the material available.

# Training and Opportunities for the Textile Engineer



The accompanying chart shows graphically the outline of a broad and carefully balanced course of four years' training designed for an Engineer who need offer no apology for the prefix Textile. Let this training be given to a sufficient number of selected men of the highest personal characteristics, and add a few years of broadening practical experience, and the industry will be served with its greatest need, in the opinion of the writer.

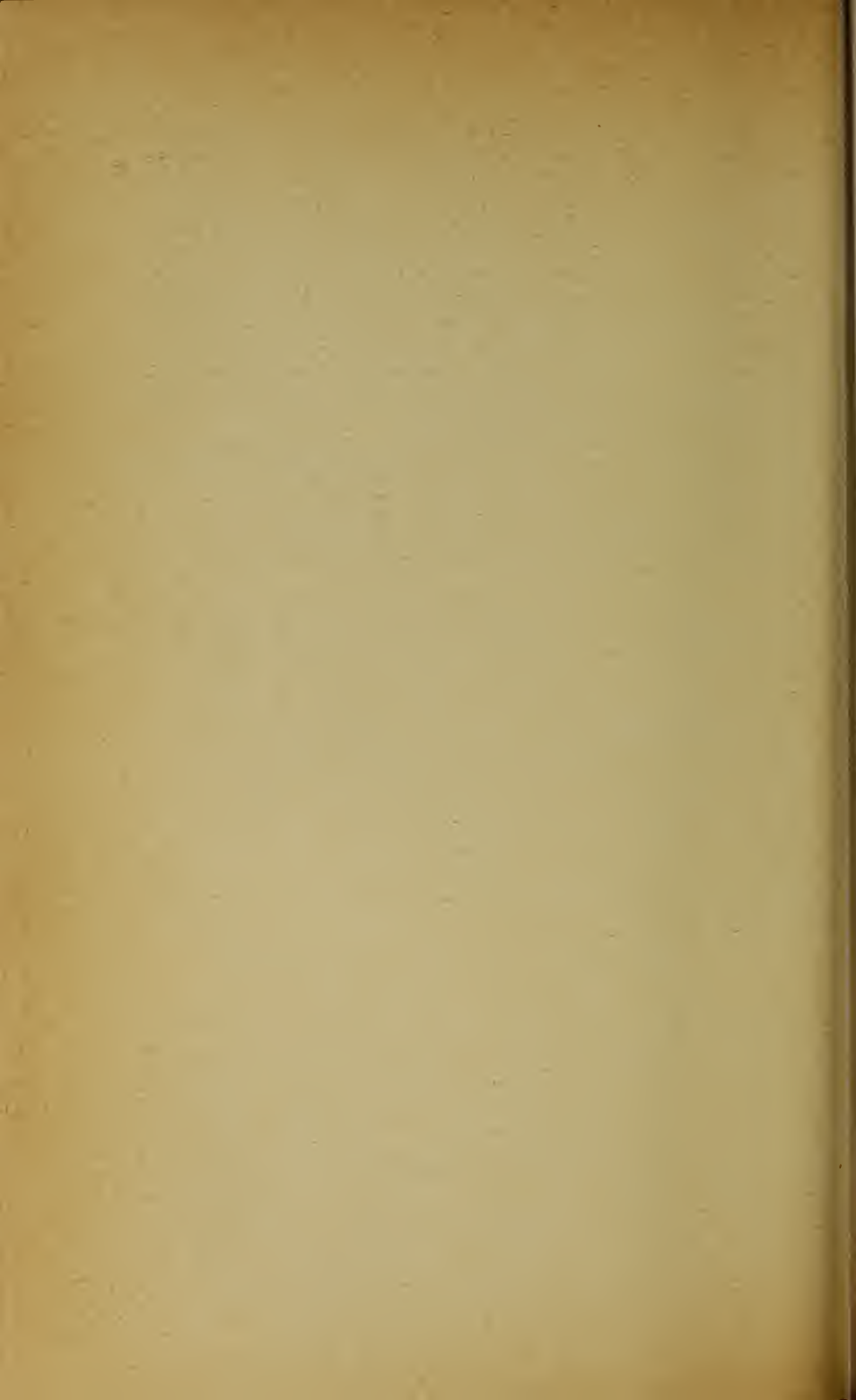
The personal qualities necessary for success are not different here than elsewhere, and comprise as the most important, character, initiative, perspective, industry, thoroughness, responsibility and executive ability. In these factors the schools can, of course, only guide and stimulate whatever natural latent powers are present in the student.

In the last subdivisions of the chart are indicated the various branches of the industry into which men with the training outlined above will naturally gravitate and make their careers. In specializing along the lines of a single industry, however large, the tendency will naturally be narrowing and the course outlined above has emphasized breadth as far as possible.

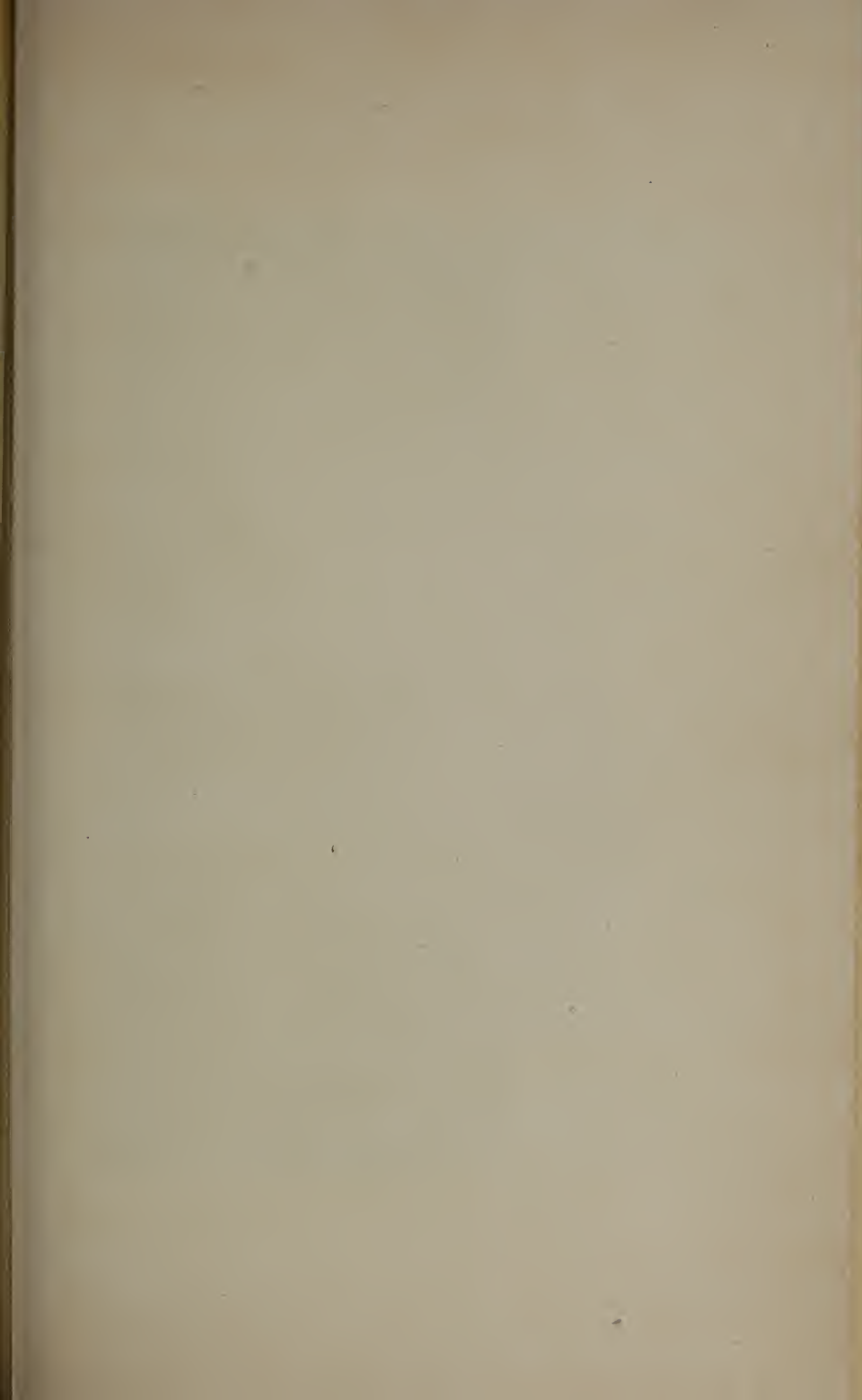
#### SCHEME NOT VISIONARY

That this scheme is not visionary is proved by the fact that graduates from such a course of study in one of our textile schools have already entered every one of the lines of effort embraced under the divisions of the chart indicating opportunities.

Whatever comes after the war, we may be sure that carefully trained men are going to play a far more prominent part in manufacturing and business everywhere. Europe is getting ready to systematize the use of scientific training all through manufacturing and trade more universally than heretofore, and American mills will serve their own interests by co-operating to the fullest extent in the development of trained men of personal ability with the grasp and imagination that will carry the industry forward.









COLONIAL AVENUE BUILDING AND  
FALMOUTH STREET BUILDING

SOUTHWICK HALL

BULLETIN  
OF THE  
Lowell Textile School

LOWELL, MASS.

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*Issued Quarterly*

---

1917 - 1918

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Entered August 26, 1902, at Lowell, Mass., as second class matter,  
under Act of Congress of July 16, 1894.

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*Moody Street and Colonial Avenue*

# CALENDAR

## FOR 1917

### JANUARY

S	M	T	W	T	F	S
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

### FEBRUARY

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	..	..	..

### MARCH

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

### APRIL

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..

### MAY

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6	7	8	9	10	11	12
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### JUNE

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### JULY

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22	23	24	25	26	27	28
29	30	31	..	..	..	..

### AUGUST

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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

### SEPTEMBER

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9	10	11	12	13	14	15
16	17	18	19	20	21	22
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### OCTOBER

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28	29	30	31	..	..	..

### NOVEMBER

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### DECEMBER

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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30	31	..	..	..	..	..

## FOR 1918

### JANUARY

S	M	T	W	T	F	S
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13	14	15	16	17	18	19
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27	28	29	30	31	..	..

### FEBRUARY

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24	25	26	27	28	..	..

### MARCH

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24	25	26	27	28	29	30
31	..	..	..	..	..	..

### APRIL

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7	8	9	10	11	12	13
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28	29	30	..	..	..	..

### MAY

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19	20	21	22	23	24	25
26	27	28	29	30	31	..

### JUNE

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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

### JULY

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

### AUGUST

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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

### SEPTEMBER

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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..

### OCTOBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

### NOVEMBER

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

### DECEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..

# CALENDAR

## January—June, 1917

January 22, Mon.  
February 5, Mon.  
February 22, Thurs.  
Feb. 26, Mon.

March 10, Sat.  
April 11, Wed.  
April 14, Sat.  
April 16, Mon. to April 21,  
Sat. inclusive  
May 21, Mon.  
May 30, Wed.  
June 1, Fri.  
June 12-13, Tues and Wed.,  
9 A. M.

Semi-annual examinations begin.  
SECOND TERM begins.  
Washington's Birthday—Holiday.  
Annual examinations for evening classes  
commence.  
End of first five-week period of second term.  
Certificates awarded to Evening Graduates.  
End of second five-week period of second term.

Recess.  
Final examinations begin.  
Memorial Day—Holiday.  
Diplomas awarded to Day Graduates.

First entrance examinations.

## September, 1917—June, 1918

September 4 and 5, Tues.  
and Wed. 9 A. M.

September 17, Mon.—9 A. M.

September 20, Thurs.—7 P. M.

September 24, Mon

October 1, Mon.

October 12, Fri.

October 27, Sat.

November 28, Wed. to De-  
cember 1, Sat. inclusive

December 1, Sat.

December 24, Mon. to Janu-  
ary 2, Wed. inclusive

January 21, Mon.

February 4, Mon.

February 22, Fri.

February 25, Mon.

March 9, Sat.

April 10, Wed.

April 13, Sat.

April 18, Thurs. to April 20,  
Sat. inclusive

May 20, Mon.

May 30, Wed.

June 7, Fri.

June 11, and 12, Tues. and  
Wed. 9 A. M.

Second entrance examinations.

Re-examinations and examinations for ad-  
vanced standing begin.

Entrance examination for evening students  
begin. They will be held on Thursday  
evenings until opening of classes.

DAY SCHOOL YEAR begins.

Evening school year begins.

Columbus Day—Holiday.

End of first five-week period of first term.

Thanksgiving Recess.

End of second five-week period of first term.

Christmas Recess.

Semi-annual examinations begin.

SECOND TERM begins.

Washington's Birthday—Holiday.

Annual examinations for evening classes com-  
mence.

End of first five-week period of second term.

Certificates awarded to Evening Graduates.

End of second five-week period of second term.

Recess.

Final examinations begin.

Memorial Day—Holiday.

Diplomas awarded to Day Graduates.

First entrance examinations.

## September, 1918—January, 1919

September 3 and 4, Tues.  
and Wed. 9 A. M.

September 23, Mon.—9 A. M.

September 26, Thurs. 7 P. M.

September 30, Mon.

October 7, Mon.

October 12, Fri.

November 2, Sat.

November 27, Wed. to No-  
vember 30, Sat. inclusive

December 7, Sat.

December 23, Mon. to Janu-  
ary 1, Wed. inclusive

Second entrance examinations.

Re-examinations and examinations for ad-  
vanced standing begin.

Entrance examinations for evening students  
begin. They will be held on Thursday  
evenings until opening of classes.

DAY SCHOOL YEAR begins.

Evening school year begins.

Holiday in observance of Columbus Day.

End of first five-week period of first term.

Thanksgiving Recess.

End of second five-week period of first term.

Christmas Recess.





SOUTHWICK HALL

KITSON HALL AND CAMPUS

# Trustees of the Lowell Textile School

(Incorporated 1895)

## Honorary Trustees

FREDERICK FANNING AYER  
New York City

CHARLES H. HUTCHINS

President, Crompton and Knowles Loom Works, Worcester, Mass.

## The Corporation

### Officers, 1916

ALEXANDER G. CUMNOCK, President    JAMES T. SMITH, Clerk  
JOHN JACOB ROGERS, Vice-President    CHARLES H. CLOGSTON, Treasurer

### Trustees

On the part of the Commonwealth of Massachusetts

#### *Ex Officiis*

HIS HONOR CALVIN COOLIDGE  
Lieutenant Governor

DR. PAYSON SMITH  
Commissioner of Education

Appointed by the Governor and Council

JOHN T. DONEHUE, Lowell, 1918    FREDERICK A. FLATHER, Lowell, 1920  
Treasurer, Boott Mills

On the part of the City of Lowell

#### *Ex Officiis*

HON. JAMES E. O'DONNELL,  
Mayor of Lowell

HUGH J. MOLLOY  
Superintendent of Public Schools

FRANCIS A. WARNOCK  
President Municipal Council

By Appointment of the Lowell Textile Council  
MICHAEL DUGGAN

### Permanent Trustees

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Resident Trustee.

WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston Corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

FRANK E. DUNBAR, Lowell, Attorney-at-Law, and President, Appleton Company, Boston Corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston Corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.

EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston Corporation, mills at Lowell.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.

CHARLES H. CLOGSTON, Treasurer, Mechanics Savings Bank, Lowell.

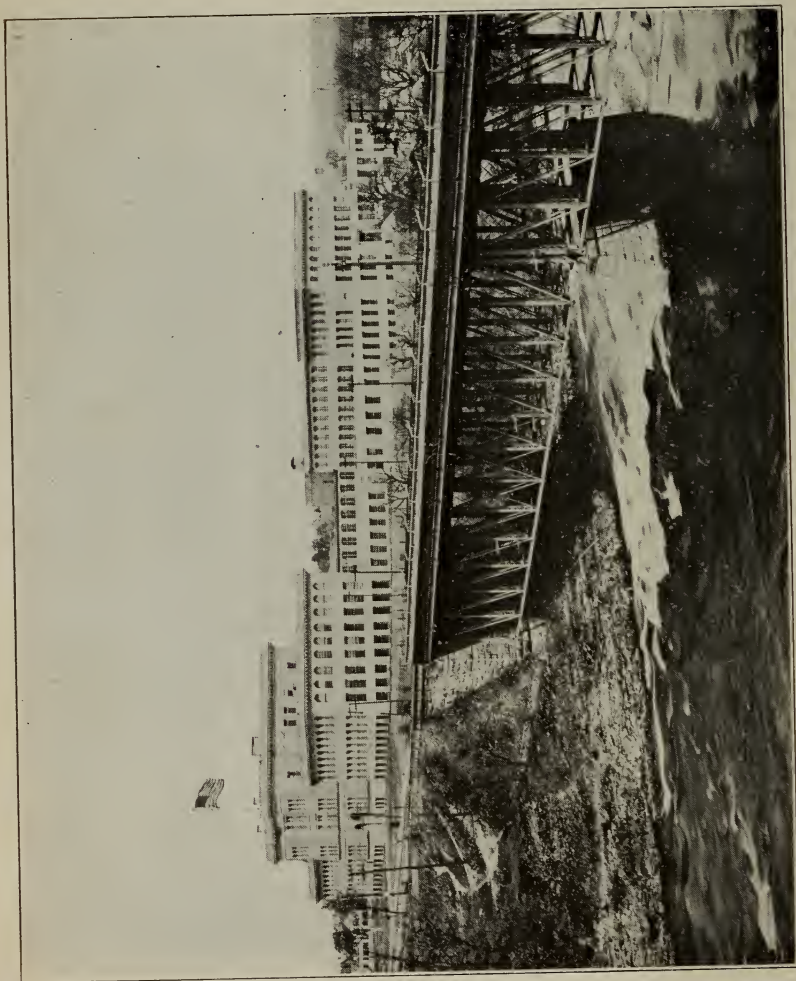
### Additional Trustees Elected by Alumni Under Act of 1905

For term ending June 30, 1917: Arthur C. Varnum, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.

For term ending June 30, 1918: Edward M. Abbot, class of 1904, Vice-President and Agent, Abbot Worsted Co., Graniteville, Mass.

For term ending June 30, 1919: Edmund A. Lucey, class of 1904, Industrial Engineer, H. L. Gantt, New York City.

For term ending June 30, 1920: Arthur J. Hennigan, class of 1906, Boston Representative for Cox & Schriber, Commission Merchants of New York City.



GENERAL VIEW OF SCHOOL, MERRIMACK RIVER

## GENERAL COMMITTEES

### FINANCE

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JAMES T. SMITH  
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ARTHUR G. POLLARD  
FREDERICK A. FLATHER  
JOHN J. ROGERS  
JAMES T. SMITH

### WAYS AND MEANS

JAMES T. SMITH, Chairman  
FREDERIC S. CLARK  
JOHN T. DONEHUE  
WALTER E. PARKER  
ROYAL P. WHITE

### LECTURES

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JOHN J. ROGERS  
HENRY A. BODWELL  
ARTHUR C. VARNUM  
FREDERIC S. CLARK

### DEPARTMENT COMMITTEES

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T. ELLIS RAMSDELL,  
EVERETT H. WALKER  
FREDERICK A. FLATHER

#### *Woolen and Worsted Yarns*

WALTER E. PARKER, Chairman  
ARTHUR J. HENNIGAN  
GEORGE E. KUNHARDT  
ARTHUR C. VARNUM

#### *Chemistry and Dyeing*

WILLIAM R. MOORHOUSE, Chairman  
EUGENE S. HYLAN  
FREDERIC S. CLARK  
WILLIAM A. MITCHELL

#### *Decorative Art*

JAMES T. SMITH, Chairman  
FREDERICK LAWTON

#### *Designing, Weaving and Finishing*

FREDERIC S. CLARK, Chairman  
GEORGE E. KUNHARDT  
ROYAL P. WHITE  
ARTHUR G. POLLARD

#### *Mechanical and Electrical Engineering*

HENRY A. BODWELL, Chairman  
JAMES T. SMITH  
REGINALD A. WENTWORTH

#### *Athletics and Grounds*

JAMES T. SMITH, Chairman  
WILLIAM R. MOORHOUSE  
ROYAL P. WHITE  
EDWARD M. ABBOT







## OFFICERS OF ADMINISTRATION AND INSTRUCTION

### ADMINISTRATION

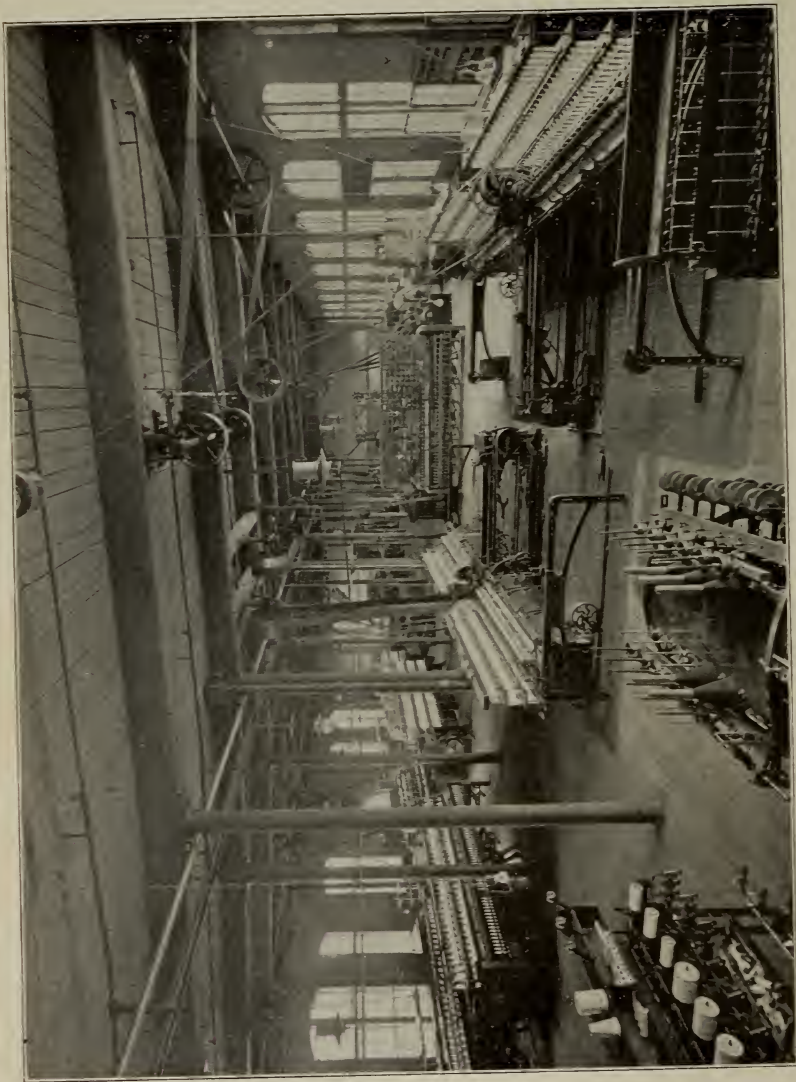
CHARLES H. EAMES, S. B., Principal of the School  
WALTER B. HOLT, Bursar  
STELLA F. MORRILL, Registrar  
FLORENCE M. LANCEY, Librarian  
RENA J. LANDERS, Secretary

### CHIEFS OF DEPARTMENTS

LOUIS A. OLNEY, S. B., M. S.,  
Professor of Chemistry; in charge of Department of  
Chemistry and Dyeing  
EDGAR H. BARKER,  
In charge of Department of Woolen and Worsted  
Yarns  
GEORGE H. PERKINS, S. B.,  
In charge of Department of Textile Engineering  
ARTHUR A. STEWART,  
In charge of Department of Finishing  
STEPHEN E. SMITH,  
In charge of Department of Cotton Yarns and  
Knitting  
HERMANN H. BACHMANN,  
In charge of Department of Textile Design and  
Power Weaving  
LESTER H. CUSHING, A. B.,  
In charge of Department of Languages, History and  
Economics.

### INSTRUCTORS

JOHN N. HOWKER,  
Instructor in Wool Sorting and Scouring  
STEWART MACKAY,  
Instructor in Textile Design and Cloth Analysis  
ROBERT R. SLEEPER,  
Instructor in Dyeing  
HERBERT J. BALL, S. B., B. C. S.,  
Instructor in Mechanical and Efficiency Engineering  
and Accounting  
ULYSSES J. LUPIN, S. B.,  
Instructor in Mathematics, Physics and Electrical En-  
gineering  
HOWARD D. SMITH, PH. D.,  
Instructor in General Chemistry and Qualitative  
Analysis



COTTON YARN DEPARTMENT

## INSTRUCTORS—CONTINUED

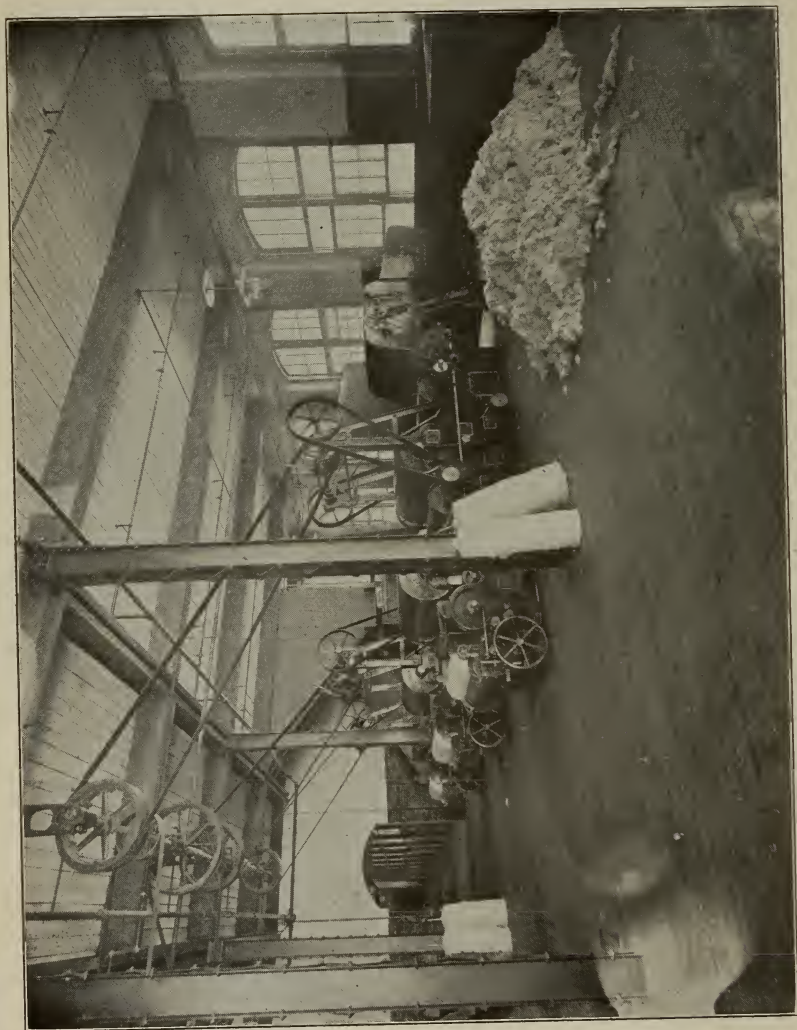
RUSSELL B. STODDARD, A. B.,	Instructor in Organic Chemistry
JOHN C. LOWE,	Instructor in Woolen and Worsted Yarns
CHARLES H. JACK,	Instructor in Machine Shop Practice
BERTRAND F. BRANN, S. B., M. S.,	Instructor in Quantitative Analysis
ANDREW YOUNGER,	Instructor in Weaving
ALEXANDER D. DAVIS, B. T. E.,	Instructor in Mechanical Drawing and Mechanism
LOUIS C. PLAYDON,	Instructor in Cotton Yarns
C. LEONARD GLEN,	Instructor in Finishing
MARTIN HOELLRICH,	Instructor in Weaving
DAVID B. MOREY, A. B.,	Instructor in Physical Culture
JOSEPH W. SAWYER, B. T. D.,	Instructor in Chemistry
E. ELIZABETH WHITNEY,	Evening Instructor in Freehand Drawing
GEORGE GOODCHILD,	Evening Instructor in Cotton Yarns
EDITH C. MERCHANT,	Evening Instructor in Freehand Drawing
C. WARREN HOWE,	Evening Instructor in Machine Shop Practice
ALBERT C. LINDSLEY,	Evening Instructor in Mechanical Drawing
ARCHIBALD R. GARDNER, M. D.,	Medical Adviser

## STUDENT ASSISTANTS

CHARLES L. HOWARTH,	Chemistry and Dyeing Department
JAMES A. IRVINE,	Engineering Department
HOMER C. RIGGS,	Engineering Department
WALTER W. POWERS,	Chemistry and Dyeing Department
GILBERT R. MERRILL,	Cotton Yarns Department

## FACULTY

Principal and Chiefs of Departments

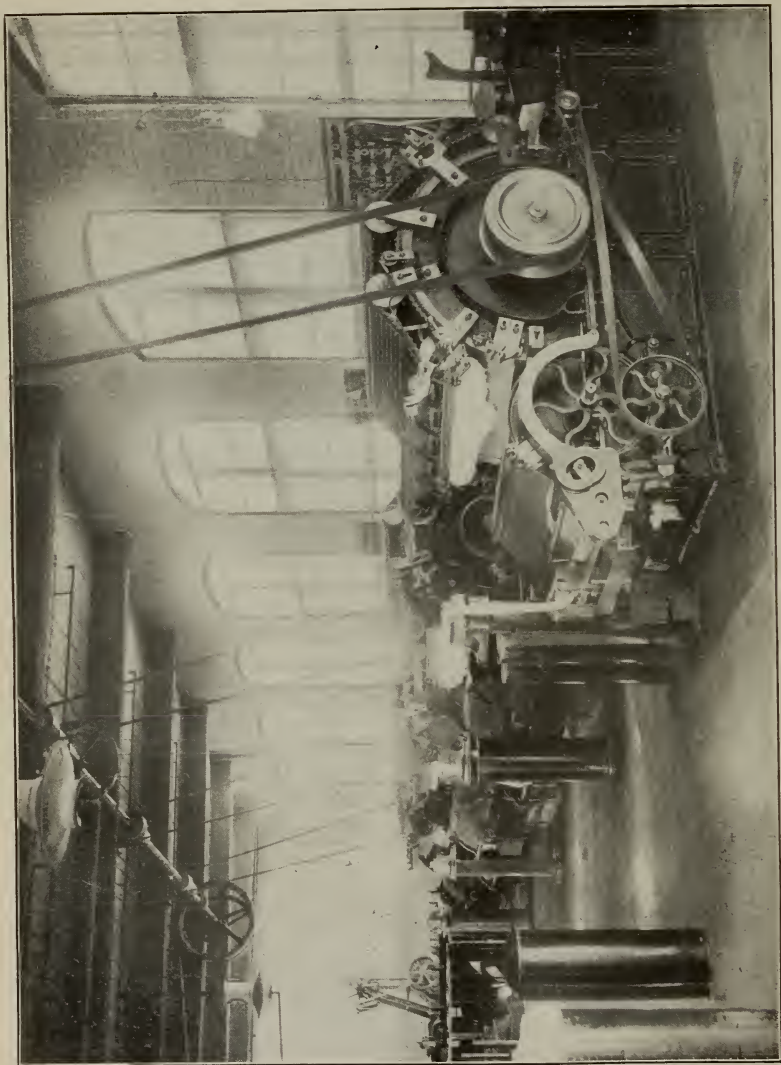


PICKER ROOM—COTTON YARN DEPARTMENT

### LECTURERS FOR THE CURRENT YEAR

- GEN. GARDNER W. PEARSON,  
Course of Lectures on Patent Law
- CAPT. FRANCIS L. BALL,  
New England Headquarters Military Training Camps  
Association, Plattsburg Camps
- REGINALD A. WENTWORTH, S. B., Supt. Saco-Lowell Shops,  
"Standardization of Textile Machines"
- RICHARD B. GREGG, Valentine, Tead & Gregg, Boston,  
"Industrial Audits"
- DR. J. B. BILL, Harvard Medical School,  
"Occupational Diseases"
- FREDERICK J. HOXIE, S. B., Engineer, Associated Factory Mutual Fire  
Insurance Co., Boston,  
"Elimination of Certain Fire Menances"
- WILLIAM W. CROSBY, S. B., Consulting Engineer, Boston,  
"Progress in Mill Construction"
- ARTHUR J. CUMNOCK, A. B., Catlin & Co., New York City,  
"The Commission House"
- C. C. PAYSON, Ingersoll Amory & Co., Boston,  
"Commercial Factors in the Distribution of Cotton"
- J. W. NEWTON, A. B., Yawman & Erbe,  
"Filing Systems"





COTTON CARDING

## THE LOWELL TEXTILE SCHOOL

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The Lowell Textile School was established, and is managed, by the Trustees of the Lowell Textile School of Lowell, Massachusetts, "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry," as set forth in the act of incorporation.

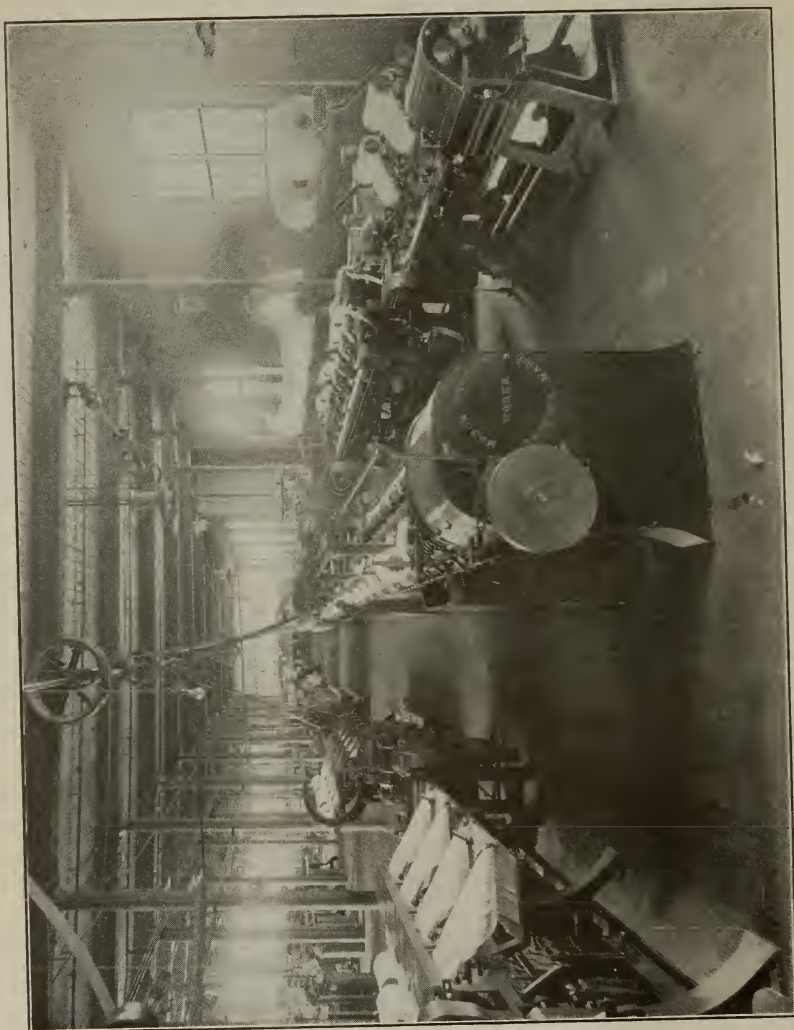
The movement for the establishment of the School dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

Not only did the normal progress of the textile industry require such a school, but through the rapid development of the manufacture of the coarser cotton fabrics in the southern states, a crisis had arrived in the leading industry of New England which could only be met by wider and more thorough application of the sciences and arts for the production of finer and more varied fabrics.

Modeled on the lines of the departments of the higher Polytechnic Institutes, it offers thorough instruction in the elements and principles of the sciences and arts applicable to textile and kindred branches of industry. Its courses of instruction treat of the application of these principles in the processes and machinery required in the manufacturing of all varieties of textile fabrics.

In industrial education the distinction between Trade and Technical Industrial Schools is coming to be understood. The Lowell School belongs to the latter class. Beginning with limited equipment, instructing staff, and means, instruction at first was by Mill or Trade school methods—the pupil was brought directly to the machine, its parts and operation in manufacturing explained to him. The curriculum was, however, rapidly extended, as contemplated in the original plan, department after department opened and equipped, and commodious and well adapted buildings provided for a permanent home.

While the progress of invention and the demands of ever changing markets will compel constant improvement in methods and additions to the very extensive equipment, the period of



COTTON COMBING

establishment is substantially closed. All departments are open for instruction in all branches of the textile art under extensive and able corps of instructors.

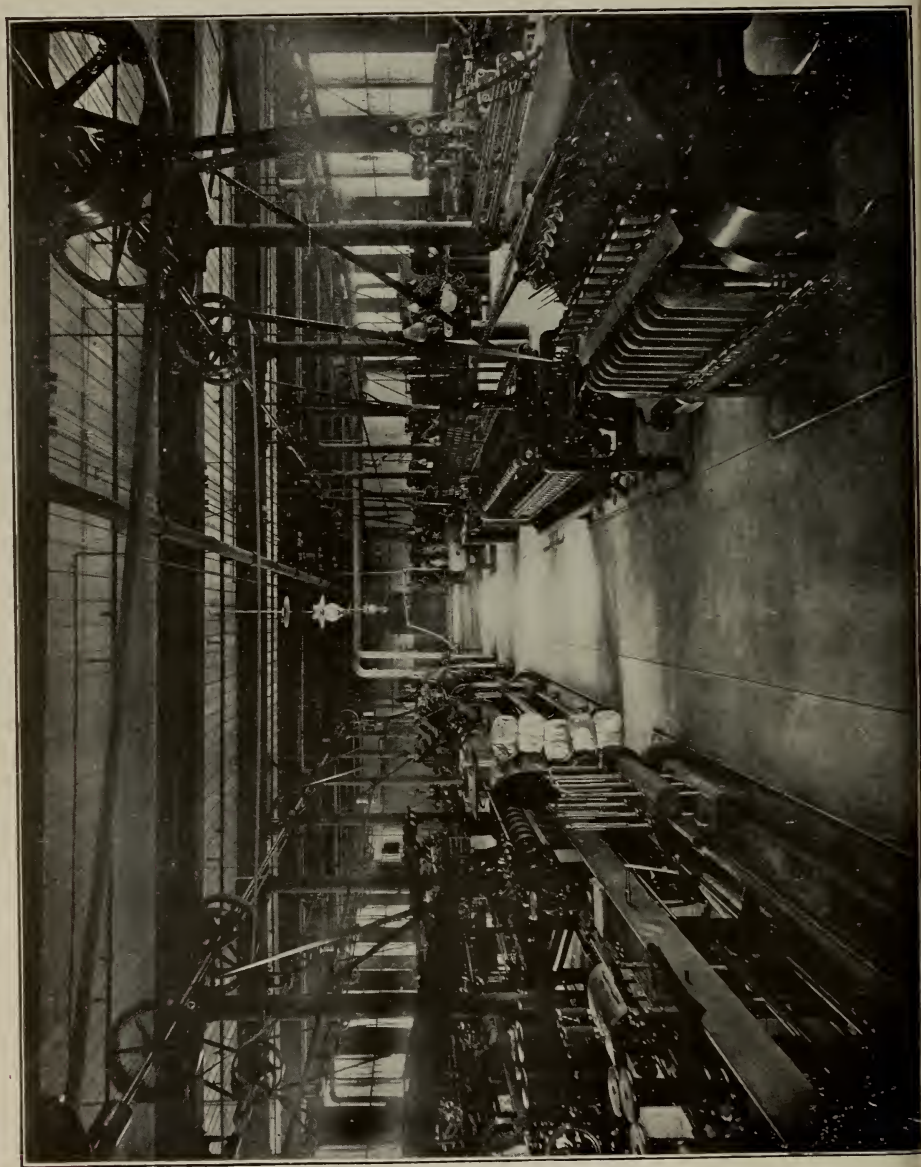
Of the incorporators the permanent trustees (limited to twenty) are mainly representatives, as president, treasurer, agent, or superintendent, of the management of great textile or textile machine corporations of the Commonwealth. Associated with them *ex officiis*, are His Honor, the Lieutenant Governor and the Commissioner of the State Board of Education, together with two trustees appointed for four-year terms by the Governor and Council. The Mayor, the President of the Municipal Council, the Superintendent of Schools, and a representative of the textile council of the city of Lowell are also members. At the session of 1905 the Legislature authorized the graduates of the school to elect two additional trustees, and by an act of 1906 the number was increased to four for four-year terms, one being elected each year. By the terms of the by-laws at least three-fourth of the permanent trustees must be persons "actually engaged in or connected with textile or kindred manufactures."

Lowell, Massachusetts, is called the "Mother Textile City of America," and in locating the school at this centre a considerable advantage is secured for the reason that every commercial fibre is utilized in the products of the great Merrimack Valley Textile district. The practical work of the school is therefore kept closely in touch with the several branches of the industry which are included in the course of study.

His Excellency, Governor Roger Wolcott, formally opened the school on January 30, 1897, and there was present a large gathering of men representing New England's textile industries. The regular classes of the school were opened on February 1, 1897, and have been regularly conducted since that time.

On January 1, 1903, the School was transferred from the rented quarters that it had occupied for five years to the site and building where it is permanently located. On February 12, 1903, his Excellency, Governor John L. Bates, in the presence of a large number of guests representing the Legislature as well as the educational, textile, and commercial interests of the Commonwealth, dedicated the present buildings.







The site is a commanding one, consisting of about fifteen acres at a high elevation, on the west bank of the Merrimack River. It extends to and overlooks the rapids of Pawtucket Falls which was the first water power in America to be used on an extensive scale to operate power looms. It was contributed by Frederick Fanning Ayer, Esquire, of New York City, and the Proprietors of the Locks and Canals on the Merrimack River. The buildings consist of Southwick Hall, Kitson Hall, the Falmouth Street Building, Colonial Avenue Laboratories, and a power plant located east of the Falmouth Street Building.

Southwick Hall was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esquire, of New York City, and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 x 90 ft., having three stories and two wings 80 x 85 ft. each with two stories and well lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing Departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing Departments.

Kitson Hall, dedicated to the memory of Richard Kitson was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor.

This hall makes a right angle with Southwick Hall, is 60 feet by 252 feet and has one story and a basement. The first floor is occupied by the Cotton Yarn and Knitting Departments, while the basement contains the Mechanical and Electrical Engineering Laboratories and the Machine Shop.

The Falmouth Street Building forms the third side of the quadrangle and consists of three portions, one 60 x 75 ft., three stories, one 75 x 130 ft., three stories, and the head house 70 x 80 ft., three stories and basement. The building is occupied by the picker section of the Cotton Yarn Department, the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment



WOOL SORTING

for the manufacture of wool yarn from the fleece to the finished yarn spun by either the English or French systems. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms and a section of the building is occupied by the Students' Lockers and Recreation Rooms.

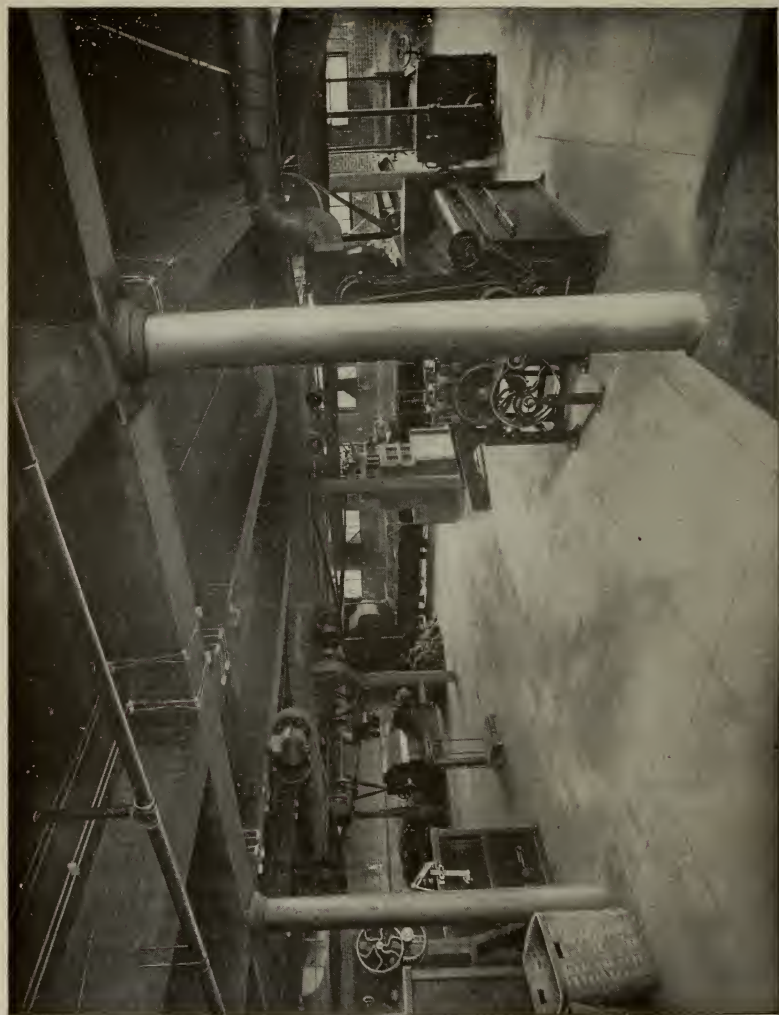
Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department. The work of construction was also in charge of the engineers of this department. The building completes the fourth side of the quadrangle and in outward appearance corresponds to the architectural features of the other school buildings. It is a single story building and has the dimensions of 195 x 60 ft. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing Departments that occupy this building. The funds for this building were provided by the state of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows:

Cotton Yarns and Knitting .....	16,200 sq. ft.
Woolen and Worsted Yarns .....	28,160 " "
Textile Design and Decorative Art .....	16,806 " "
General Chemistry and Dyeing Laboratories .....	28,400 " "
Finishing Cotton, Woolen and Worsted .....	10,606 " "
Power Weaving .....	15,360 " "
Textile Engineering .....	24,297 " "
Power Plant .....	10,047 " "
Assembly and Physical Culture Halls .....	10,800 " "
Entrances, corridors, stairways, etc. ....	14,487 " "

The additional floor space is devoted to Administration Offices, Library, Assembly Halls, Class Rooms, Store Rooms, etc.

Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, to meet the needs of the textile and kindred industries, it has developed its curriculum, its methods of instruction, and



WOOL SCOURING AND CARBONIZING



equipment as those needs arose. At this writing its chemical and dyeing, decorative art, design, yarn and weaving departments are liberally housed, equipped, and provided with able instructors for the highest efficiency, though additional floor space is required and is being provided as the roster of pupils increases. This objective will be kept constantly in view and as new demands are presented an effort will be made to extend courses, equipment and floor space.

The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this. There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric, within the school.

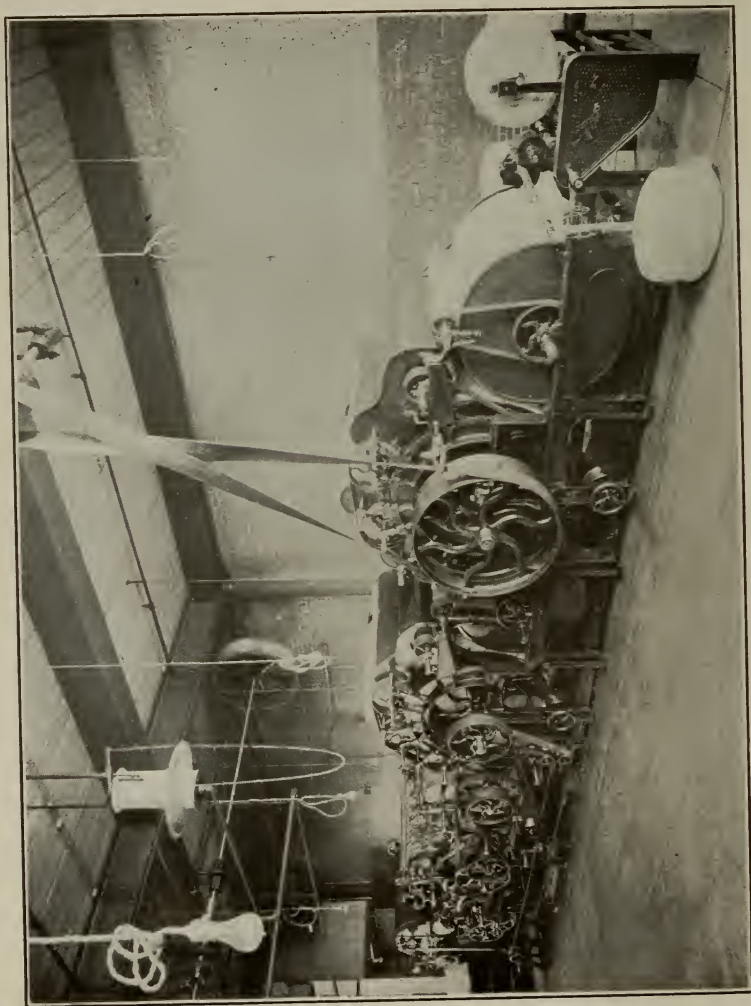
The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualifications equivalent to those given by a regular four-year course of a high school or academy of good standing.

The evening classes are held for about twenty weeks of the year and are for those who are unable to attend the day courses. These are similar to the day courses, but are aimed especially to meet the needs of students working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education.

The school has so advanced in the standard and character of its work, as well as the standard for admission to its day classes, that the Legislature of the State of Massachusetts granted to the school the power to confer degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Dyeing (B. T. D.) upon those students who satisfactorily complete one of the prescribed four-year courses. By a legislative act of 1917 the degree of Bachelor of Textile Dyeing is changed to Bachelor of Textile Chemistry (B. T. C.).

The growth of the school has been constant, as is evident from the fact that when it was opened February 1, 1897, there were 32 day and 110 evening pupils. January 1, 1917, the roster showed 176 day pupils and 834 evening pupils or 1010 in all.





WORSTED CARD

## EQUIPMENT

The equipment of machinery, inventoried July 1, 1916, at \$283,159.85, is most varied for textile educational purposes, and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to mutual advantage of student and manufacturer.

### COTTON YARNS DEPARTMENT

#### *Ginning*

- One 50 saw gin made by Daniel Pratt Gin Co., Prattsville, Ala.
- One Prior Roller Gin.

#### *Opening, Picking and Waste Machinery*

An outfit of Kitson Picking Machinery from works of Saco-Lowell Shops, Lowell, Mass., including:

- One 40 in. Two Beater Breaker Lapper with automatic feeder.
- One 40 in. Single Beater Intermediate Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps.
- One 40 in. Single Beater Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps, Kirschner Patent Carding Beater
- One Roving Waste Opener
- One Thread Extractor.

The power for this picker section is furnished through a Westing house 15 h. p. 220 volt direct current motor.

#### *Carding, Combing and Dyeing*

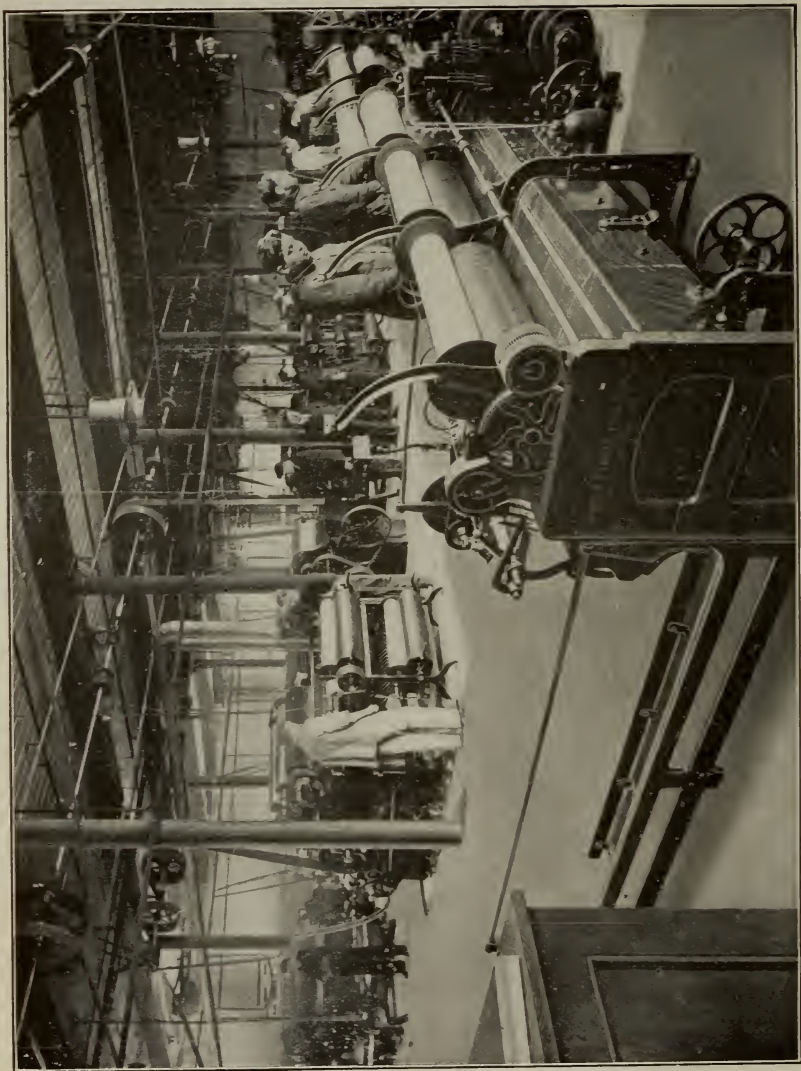
The following machinery made by the Saco-Lowell Shops, Lowell, Mass.

- One Top Flat Card.
- Three Revolving Flat Cards.
- Two Railway Heads.
- Two Drawing Frames.
- Stripping Rolls, etc.
- Two of these cards form a unit of a waste carding equipment.

One of these cards is equipped with Chapman Electric Neutralizer, made by the Chapman Electric Neutralizer Co., Portland, Me.

From the Whitin Machine Works, Whitinsville, Mass.

- One 40 in. Revolving Flat Card.
- Card Grinding Rolls.
- One Sliver Lapper.



WOOLEN YARN DEPARTMENT

One Six Head Ribbon Lapper.  
One Four Head Ribbon Lapper.  
One Two Head Comber.  
One Six Head Comber.  
One Eight Head High Speed Comber.  
From the Mason Machine Works, Taunton, Mass.  
One Sliver Lap Machine.  
One Comber.  
From John Hetherington & Sons, Ltd., Manchester, Eng  
One Two Head Comber.  
One Model Comber Head.

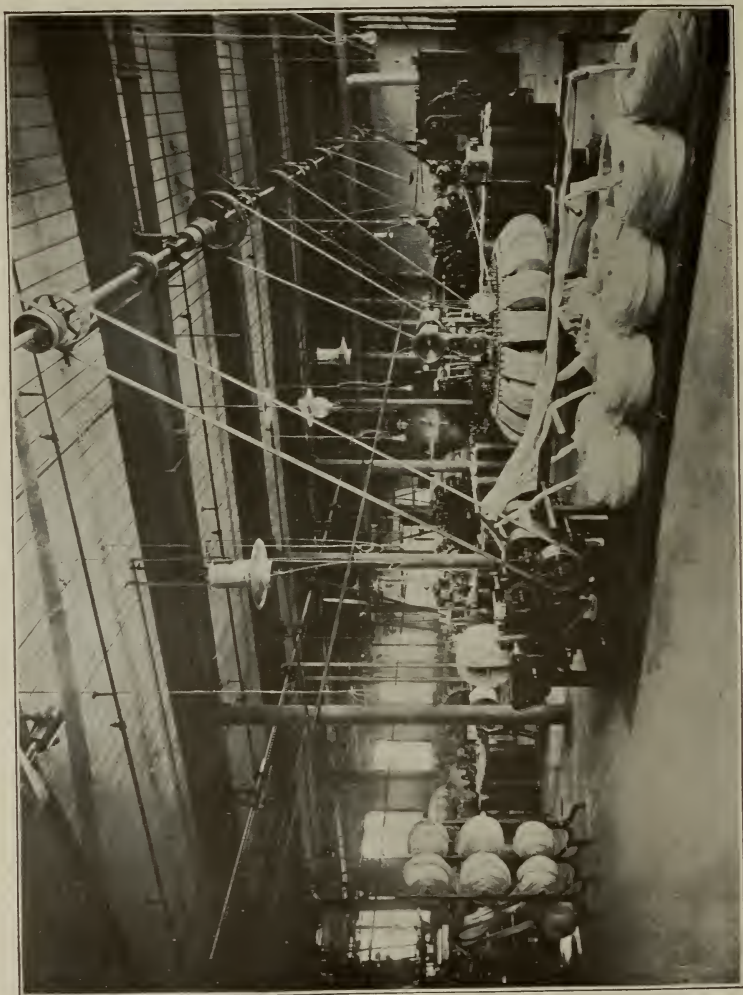
*Roing, Spinning and Twisting*

From Saco-Lowell Shops, Lowell, Mass.  
One Slubber.  
One Slubber for waste spinning unit.  
One Intermediate.  
One Fine Frame.  
One Jack Frame.  
Three Ring Spinning Frames.  
One Spinning Mule.  
One Spooler.  
One Wet and Dry Twister.  
From Fales & Jenks, Pawtucket, R. I.  
One Wet and Dry Twister.  
From Draper Company, Hopedale, Mass.  
One Wet and Dry Twister.  
From Whitin Machine Works, Whitinsville, Mass.  
Three Ring Spinning Frames.  
From Woonsocket Machine and Press Co., Woonsocket, R. I.  
One Intermediate Fly Frame.  
From Asa Lees Co., Oldham, England, Wm. Firth Company, Agents.  
One Mule for fine spinning.

*Miscellaneous Machinery of this Department includes:*

From the Saco-Lowell Shops, Lowell, Mass.  
One Reel.  
One Model Fine Fly Frame.  
One Model Fly Frame Compound.  
One Model Card Feed.  
One Model Flat Grinding Device.  
One Model Scroll Setting Device.  
From Draper Company, Hopedale, Mass.  
One Weeks Banding Machine.  
One Moscrop Single Thread Testing Machine.  
Miscellaneous Machines.  
One Yarn Inspection Machine with blackboards.





WOOL COMBING



Two Barber Knotters.  
Two Yarn Reels and Grain Scales.  
One Power Yarn Tester.  
One Twist Counter.

From Howard Brothers, Worcester, Mass.

One Exhibition Board of Hand Cards.  
One Exhibition Board of Card Clothing.

The power for this department is furnished through:

One 10 h. p. Allis Chalmers motor, and one 15 h. p. Allis Chalmers motor.

### **Knitting Department Equipment**

#### *Winding Machinery*

One Universal Winder 6 spindles for cones and tubes.  
One Payne Bobbin Winder.  
One Foster Winder 10 spindles for cones and tubes.

#### *Hosiery Machines*

One Acme full automatic  $3\frac{3}{4}$  in. cyl. 160 needles.  
One Acme full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.  
One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 120 needles.  
One Mayo Model A full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.  
One Mayo Model C full automatic  $3\frac{3}{4}$  in. cyl. 220 needles.  
One Scott & Williams new automatic  $3\frac{3}{4}$  in. cyl. 176 needles.  
One Scott & Williams Model G  $3\frac{3}{4}$  in. cyl. 220 needles.  
One Banner full automatic  $3\frac{3}{4}$  in. cyl. 200 needles.  
One Brinton full automatic  $3\frac{3}{4}$  in. cyl. 176 needles.  
One Branson hand machine,  $3\frac{1}{2}$  in. cyl. 80 needles.

Machines in this group are equipped with special attachments for producing lace front work, high splicing, double soling and striped work.

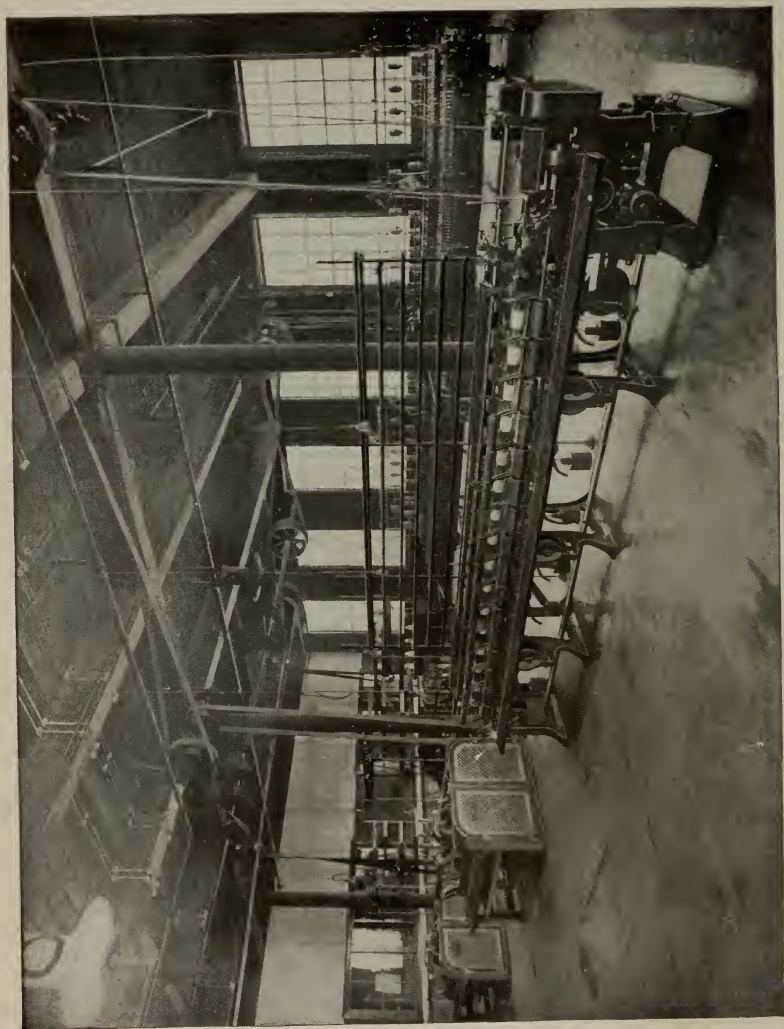
One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 160 needles.  
One Wildman Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.  
One Wildman Fancy Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.  
One Wildman Ribber  $3\frac{1}{2}$  in. cyl. 220 needles.  
One Wildman Striping Ribber  $5\frac{1}{4}$  in. cyl. 240 needles.  
One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 176 needles.  
One Brinton Ribber  $3\frac{3}{4}$  in. cyl. 200 needles.  
One Brinton Tie Machine  $1\frac{3}{4}$  in. cyl. 100 needles.

#### *Underwear Machinery*

One Crane Spring Needle Machine 19 in. cyl. 1040 needles.  
One Scott & Williams Ribber 19 in. cyl. 12 cut.  
One Wildman Ribber 20 in. cyl. 8 cut.

#### *Flat Machines*

One Lamb glove machine 8 in. bed 6 cut.



FRENCH SPINNING

- One Lamb Knitting Machine 18 in. bed 5 cut.
- One Lamb Sweater Machine 24 in. bed 4 cut.
- One Grosser Sweater Machine 32 in. bed 3 cut.
- One Grosser Jacquard Machine 16 in. bed 10 cut.
- One Dubied Scarf Machine 18 in. bed 18 cut.

#### *Finishing Machines*

- One Grosser 2 thread looper 22 point.
- One Hepworth looper 16 point.
- One Beattie looper 16 point.
- One Beattie looper 3 point.
- Five Union Special Sewing Machines for Overseaming, Double Stitch Covering, Seaming and Welting and Vest Finishing.
- Six Merrow Sewing Machines including two shell stitch machines and three overseaming and crocheting machines.
- Three Singer Machines for plain sewing, buttonholing and button sewing.

The power for this department is supplied through a 7½ h. p. 220 volt Westinghouse motor.

### WOOLEN AND WORSTED DEPARTMENT

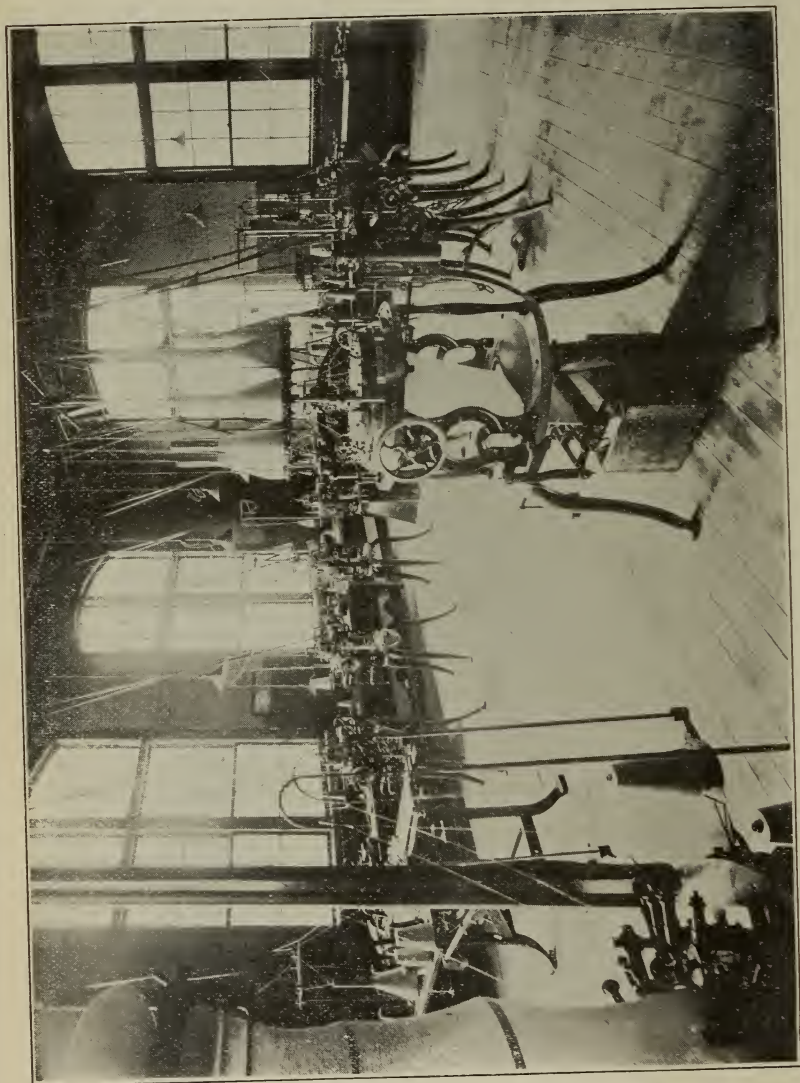
#### *Wool Sorting and Grading*

This department is thoroughly equipped with benches, baskets, etc., for sorting wool in a convenient manner, and in addition there are samples of all grades and types of wool and other fibres.

#### *Scouring and Carbonizing*

- Wool Scouring Machinery, C. G. Sargents' Sons Corp., Graniteville, Mass., consisting of
  - Cone Duster for Grease Wool.
  - Two Scouring Bowls, each 17 ft. x 24 in., with Parallel Rakes.
  - One Automatic Feeder for Scouring Bowls.
  - One Automatic Feeder for Dryer.
  - One Single Apron Dryer.
  - Carbonizing Screw Acid Tank.
  - Carbonizing Duster, with Crush Rolls.
- From North Chelmsford Machine Co.
  - One Rinse Box.
- From Schaum & Uhlinger, Philadelphia, Pa.
  - One Hydro-Extractor.
- From C. S. Dodge, Lowell, Mass.
  - One Shoddy Picker.
  - One Bagging Stand.

The power for this department is supplied through a 20 h. p. General Electric 220 volt motor.



KNITTING DEPARTMENT



## Woolen

### *Picking*

- One Parkhurst Burr Picker, Atlas Mfg. Co., Newark, N. J.
- One Mixing Picker, Davis & Furber Machine Co., North Andover, Mass., equipped with Improved Mixing Picker Feed, and Spencer Oiler, both made by George S. Harwood & Son, Boston, Mass.

### *Carding*

One set of Woolen Cards, including:

First Breaker, Second Breaker and Finisher, Davis & Furber Machine Co., North Andover, Mass.; this set of cards equipped with Bramwell First Breaker Feed (George S. Harwood & Son, Boston, Mass.); Torrance Balling Head and Creel, (Torrance Mfg. Co., Harrison, N. J.) between First Breaker and Second Breaker; Apperly Feed (George S. Harwood & Son, Boston, Mass.) between Second Breaker and Finisher, and Combination Rub Rolls and Apron Condenser, (Davis & Furber Machine Co., North Andover, Mass.), on Finisher. These cards are for medium or coarse work.

One set of Davis & Furber Woolen Cards, including:

First Breaker, Second Breaker and Finisher. This set of cards equipped with Bramwell First Breaker Feed, (George S. Harwood & Son, Boston, Mass.); Apperly Feed with Kemp Traveller, (George S. Harwood & Son, Boston, Mass.), between First Breaker and Second Breaker; Bates Feed (E. V. Bates, Lowell, Mass.), between second Breaker and Finisher, and Davis & Furber Double Apron Condenser, on Finisher. These cards are for fine work.

Both sets of cards are equipped with Chapman Electric Neutralizer, made by Chapman Electric Neutralizer Co., Portland, Me.

One Sample Mixing Card, Torrance Mfg. Co., Harrison, N. J.

### *Spinning*

One Spinning Mule, 120 spindles, Davis & Furber Machine Co., North Andover, Mass.; Bobbin Holders, supplied by American Bobbin Holder Co., W. Medway, Mass.

One Spinning Mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; Bobbin Holders supplied by Murdock & Geb, Franklin, Mass.

One 1907 Fancy Yarn Twister, 20 spindles, Davis & Furber Machine Co., North Andover, Mass.

### *Card Grinding*

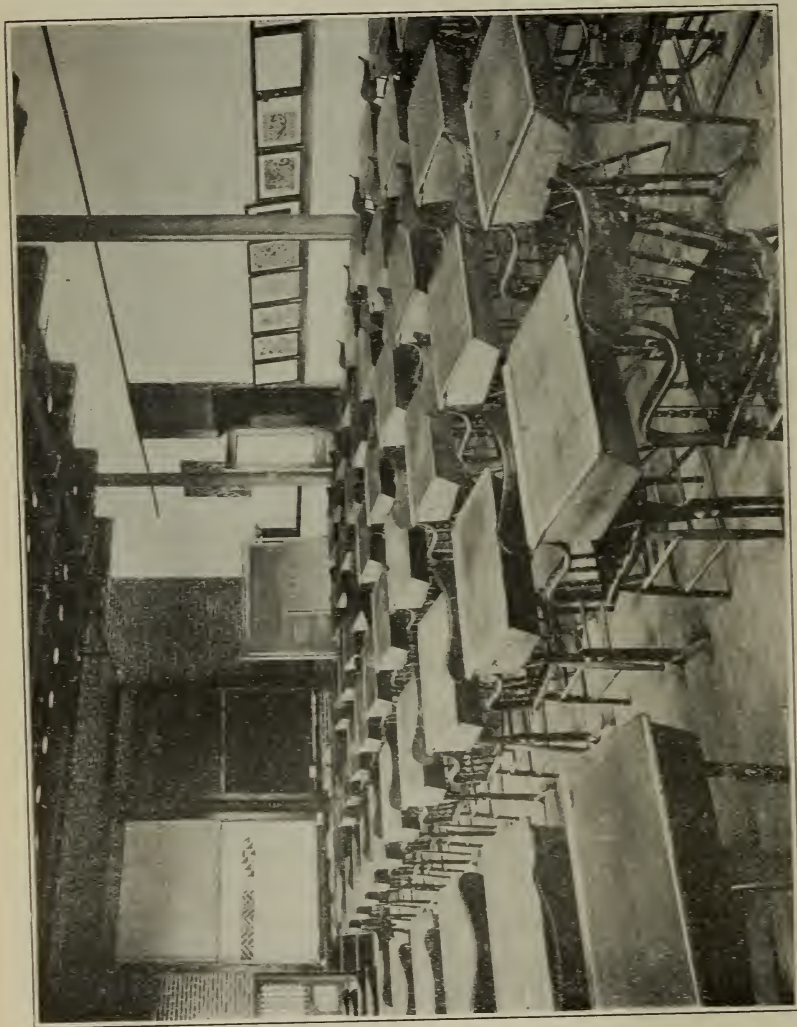
One Roy Grinding Frame, B. S. Roy & Son, Worcester, Mass.

Two Roy Traverse Grinders, B. S. Roy & Son, Worcester, Mass.

One Entwistle Traverse Grinder, T. C. Entwistle Co., Lowell, Mass.

One Complete set of Carder's Tools, W. H. Brown, Worcester, Mass.





DESIGN LECTURE ROOM

## Worsted

### *Carding*

One 50-inch Double-cylinder Worsted Card (4 lickerin), Davis & Furbur Machine Co., North Andover, Mass., equipped with Bramwell Feed, George S. Harwood & Son, Boston.; also equipped with a Chapman Electric Neutralizer, Chapman Electric Neutralizer Co., Portland, Me.

### *Backwashing*

One Double Bowl, Five Cylinder Backwasher, with Gill Box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland Patent pressure motion.

### *Gilling*

One Doubling Balling Head Gill Box (with double screws), Saco-Lowell Shops, Lowell, Mass.

One Weigh Gill Box and Creel, Saco-Lowell Shops, Lowell, Mass.

### *Combing*

One Baller, (punch), Crompton & Knowles, Worcester, Mass.

One Noble Worsted Comb, Crompton & Knowles, Worcester, Mass.

### *Gilling*

One Finishing Can Gill Box, Hall & Stell, Keighley, England.

One Finishing Balling Head Gill Box, Hall & Stell, Keighley, England.

## **Bradford System of Drawing, Spinning and Twisting**

The following Drawing, Spinning and Twisting Machinery, from Prince Smith & Son, Keighley, England.

One Revolving Creel for 12 Balls.	One Double Head Can Gill Box.
One 2 Spindle Drawing Box.	One 2 Spindle Gill Box.
One 2 Spindle Weigh Box.	One 2 Spindle Flyer Spinner.
One 4 Spindle First Finisher.	One 12 Spindle Ring Spinner.
One 12 Spindle Dandy Reducer.	One 12 Spindle 2 Fold Cap Twister.
One 12 Spindle Cap Spinner.	One 12 Spindle 6 Fold Ring Twister.

The following Drawing, Spinning and Twisting Machinery from the Saco-Lowell Shops, Lowell, Mass.

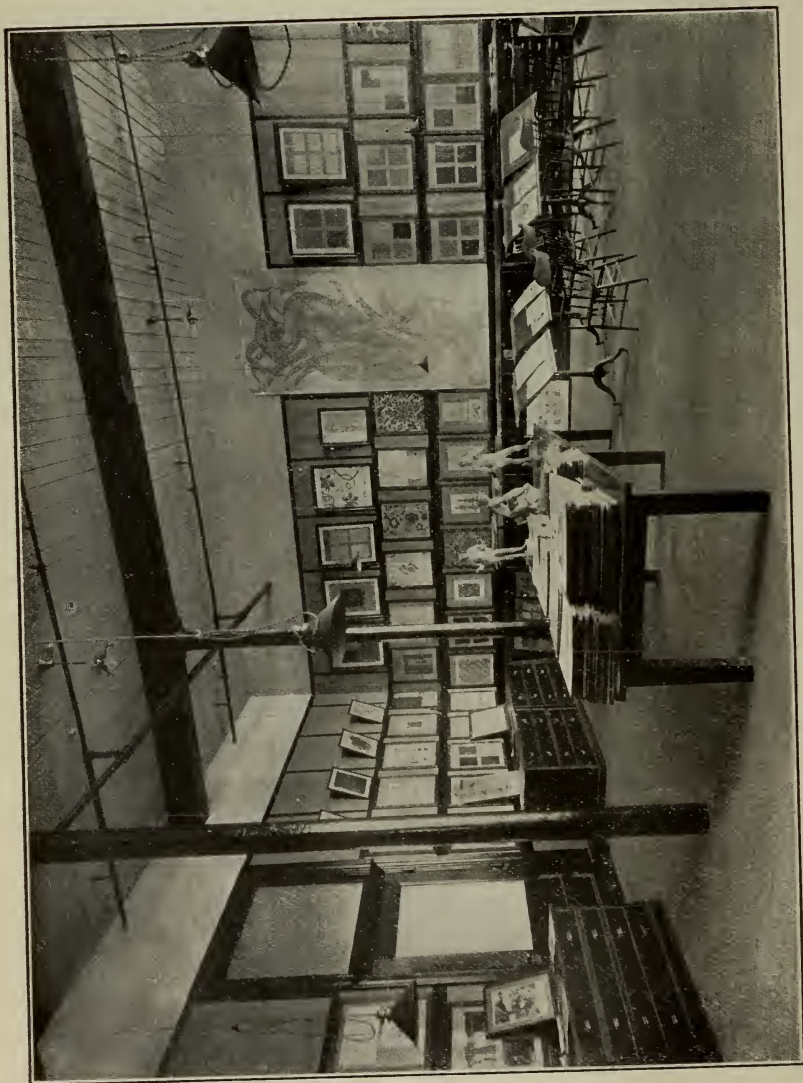
One 2 Spindle Drawing Box.	One 8 Spindle Cone Rover.
One 6 Spindle Second Finisher.	One 48 Spindle Cap Spinner, 5 ft. end.
One 24 Spindle Dandy Rover.	One 48 Spindle Cap Spinner, 4 ft. end.
One 6 Spindle Cone Reducer.	One 48 Spindle Boyd Ring Twister.

Yarn Conditioning Machine, C. G. Sargent's Sons Corp., Graniteville, Mass.

One Six Gang Universal Winder, equipped for cones or straight tubes, Universal Winding Co., Boston, Mass.

One Tape Band Sewing Machine, The Singer Mfg. Co., New York.

The power for the Yarn Department as well as for the Power Weaving Department is supplied through two 24 h. p. Allis-Chalmers motors.



DECORATIVE ART

## French System of Drawing and Spinning

The machinery made by the "Societe Alsacienne de Constructions Mechaniques" at Mulhouse, France, consists of the following:

<b>Peigneuse-Laine modèle P. L. B.</b>	<b>Model P. L. B. Comb with creel for 24 doublings.</b>
<b>Intersecting de 2 têtes. Pass. I and II après Peigneuses.</b>	<b>Intersecting Gill Box (2 heads)</b>
<b>Gill Box (2 têtes)</b>	<b>Gill Box (2 heads)</b>
<b>Étirage à Frottoirs (2 têtes)</b>	<b>1st Drawing (2 heads)</b>
<b>Étirage à Frottoirs (2 têtes)</b>	<b>2nd Drawing (2 heads)</b>
<b>Étirage à Frottoirs (2 têtes)</b>	<b>3rd Drawing (2 heads)</b>
<b>Étirage Réunion (4 Peignes)</b>	<b>Reducer (4 Porcupines)</b>
<b>Bobinier de Châte (8 Peignes)</b>	<b>Slubber (8 Porcupines)</b>
<b>Bobinier (8 Peignes)</b>	<b>1st Intermediate (8 Porcupines)</b>
<b>Bobinier (8 Peignes)</b>	<b>2nd Intermediate (8 Porcupines)</b>
<b>Bobinier (8 Peignes)</b>	<b>Rover (8 Porcupines)</b>
<b>Finisseur (16 Peignes)</b>	<b>Finisher (16 Porcupines)</b>
<b>Self-acting à Filer (150 Broches)</b>	<b>Self-acting Worsted Mule (150 Spindles)</b>

The apparatus in this department for obtaining and preserving the requisite condition of humidity consists of:

Four Humidifiers of the American Moistening Co., Boston, Mass.

Twelve Turbo Humidifier Heads from The G. M. Parks Co., Fitchburg, Mass. The compressed air for these heads is supplied by an Ingersoll-Rand 8 x 8 steam driven air compressor located in power house.

The power of this department is supplied through a 15 h. p. Allis-Chalmers Co.'s 220 volt motor.

## Textile Testing Laboratory

Several years ago the importance of testing fibres, yarns and fabrics began to be appreciated and through the generosity of a friend a beginning was made by the establishment of a laboratory where the physical properties of textiles may be determined and studied. To the original equipment has been added several pieces of apparatus, so that there is in the laboratory the following equipment:—

One Bausch and Lomb D. D. Microscope provided with regular eye pieces and objective for low power, high power or photographic work.

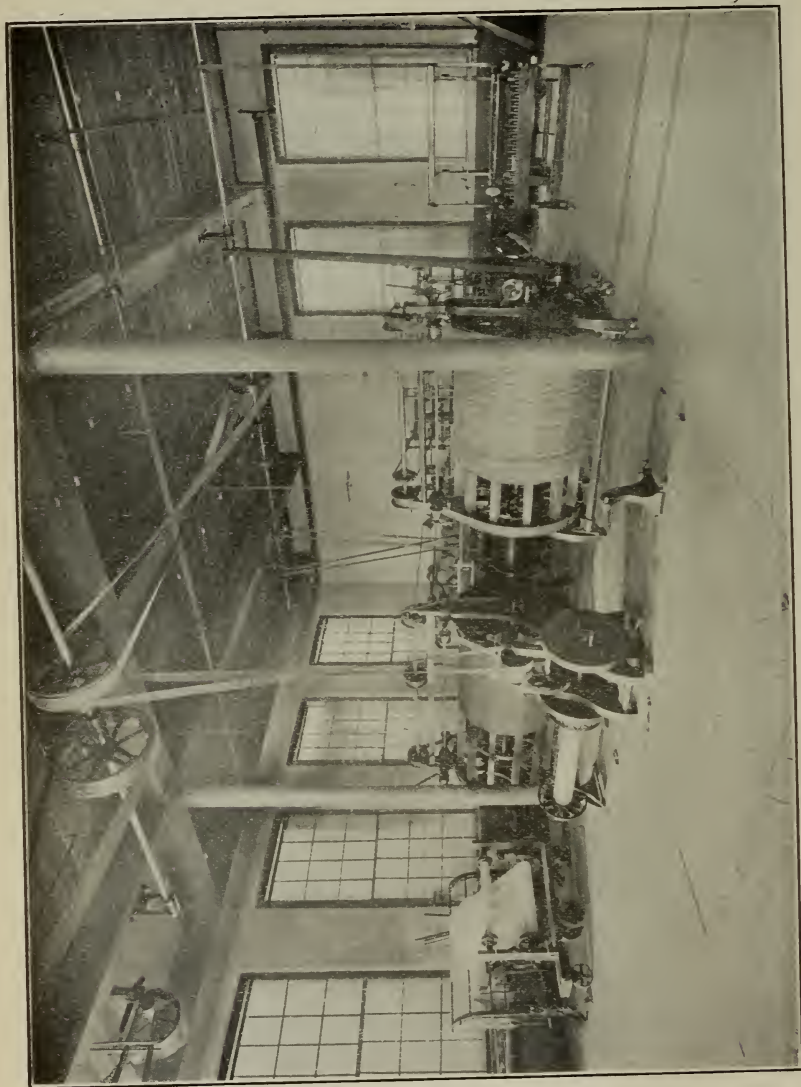
One Eye Piece Micrometer.

One Filar Micrometer (1 inch equivalent eye piece) for refined diameter determinations.

One Standard Glass Stage with corrections from comparison against the International m. m.

Complete outfit for mounting slides and for taking photo-micrographs.  
Camera Lucida,





WOOLEN AND WORSTED WARP PREPARATION



Microtome Sectioning Outfit.

One Small Skein Testing Machine.

One Gas Conditioning Oven for moisture determination.

One Electric Conditioning Oven, Emerson Apparatus Co., Boston.

One Single Yarn Testing Machine made by G. R. Smith & Co., Bradford, England.

One Hydraulic Cloth Strength Testing Machine for 4 inch samples.  
Made by G. R. Smith & Co., Bradford, England.

One Hand Cloth Strength Testing Machine for 1 inch samples. Made  
by Brown Bros., Providence, R. I.

One Brown & Sharpe Meter Reel.

One Strength Testing Machine. Made by Louis Schopper, Leipzig,  
Germany. Capacity 500 kilograms for test pieces 50 m. m. in width  
and from 100 to 400 m. m. in length. Provided with special jaws  
to test twine, strings, cords or fabrics.

One Fibre Testing Machine made by Louis Schopper. Capacity 1  
gram to 1.5 kilogram. Provided with jaws to test fibre or fine  
yarns.

One Yarn Strength Testing Machine made by Louis Schopper.  
Capacity 1000 grams to 5000 grams. Length of test pieces 200  
m. m. to 1000 m. m.

One Yarn Strength Testing Machine made by Louis Schopper.  
Capacity 5 kilograms to 30 kilograms. Test pieces 500 m. m.

One Hygrometer Dr. Koppe's System.

One Accurate Tread or Pick Counter.

One Universal Quadrant Scales for determining counts of yarn by  
the various yarn systems in use.

These last three pieces of apparatus are also made by Louis Schopper,  
Leipzig, Germany.

One Lowinson's Thread Micrometer, Charles Lowinson, N. Y. City.

The laboratory has been constructed to give plenty of light. The  
temperature and humidity of the room is controlled by the Automatic  
Humidity and Temperature Regulator made by the American Moistening  
Company of Boston, Mass.

#### *Yarn Weighing and Testing*

From Lowell Scale Company:

One Large Platform Scale.

From Howe Scale Company:

One Dram Scale.

One Gram Scale.

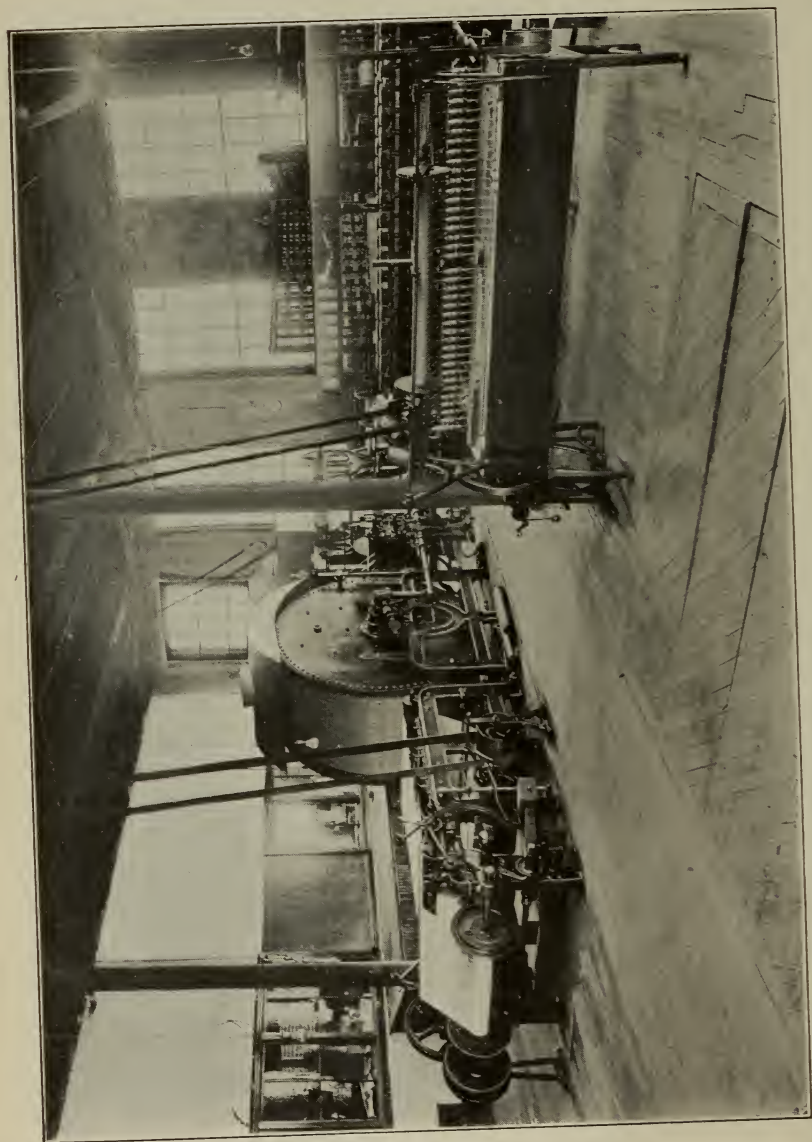
One Ounce Scale.

One Pound and Ounce Scale.

Two Yarn Reels.

One Roving Reel.

Three Grain Scales.



COTTON WARP PREPARATION

One Run Beam.  
One Hand Yarn Strength Tester.  
Two Twist Counters.  
Two Barber Knotters.  
Complete Set of Roving Cans from the Laminar Fibre Co., North Cambridge, Mass.

## DESIGN AND POWER WEAVING DEPARTMENT

### *Design Department*

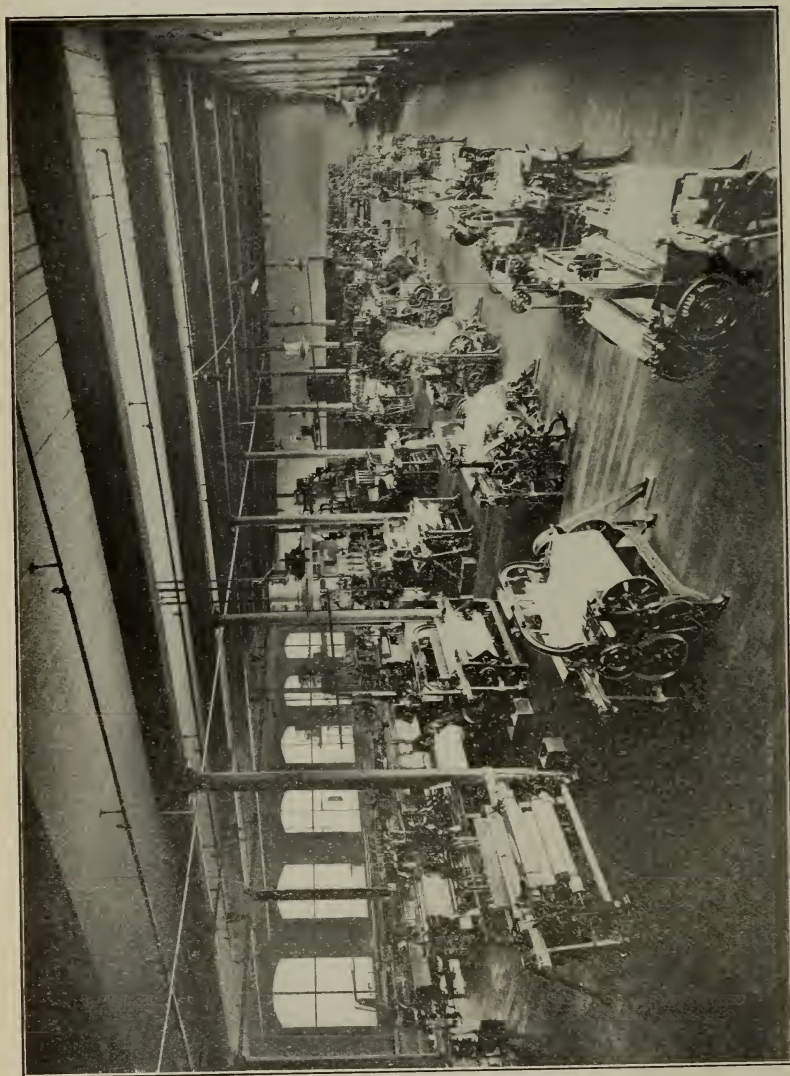
One Christian Becker Balance.  
Five Volman & Sons Balances.  
One Twist Tester—James H. Heal, Halifax, England.  
One Microscope—Bausch & Lomb.  
One Reel—Brown & Sharpe Mfg. Co., Providence.  
One Pick Counter—Chas. Lowinson, N. Y.  
One Torsion Calculation Balance, Torsion Balance Co., N. Y.  
One Grain Roving Scales, Brown & Sharpe, Providence.  
One Gramme Roving Scale. Brown & Sharpe, Providence.  
Miscellaneous dies for cutting accurately standard sizes of cloth.

### *Cotton Warp Preparation*

One Spooler, Saco-Lowell Shops, Lowell, Mass.  
One Warper, Saco-Lowell Shops, Lowell, Mass.  
One Slasher, Saco-Lowell Shops, Lowell, Mass.  
One Beamer, T. C. Entwistle Co., Lowell, Mass.  
One Winder, Altemus & Co., Philadelphia, Pa.  
One 400 End Improved Draper Warper, Draper Co., Hopedale, Mass.  
Drawing-in Frames, etc.  
One Pat. Slasher Press Roll, J. Battles & Co., Lawrence, Mass.  
One Pat. Expansion Comb for Warper, T. C. Entwistle Co., Lowell, Mass.  
One Quiller, Johnson & Bassett, Worcester, Mass.  
Set of six in. spools for Warper, Macrodi Fibre Co., Woonsocket, R. I.  
One Universal Winder for Cop and Bobbin winding, Universal Winder Co., Boston, Mass. This is driven by a 1-8 h. p. 220 volt direct current motor made by Holtzer-Cabot Electric Co.

### *Woolen and Worsted Warp Preparation*

Two 40 End Jack Spoolers.  
Two Spool Racks for 12 spools each.  
One Pattern Dry Frame Dresser.  
One Pipe and Cylinder Dresser.  
One 60 inch Reel.  
One 82 inch Reel.  
One Double Head Beamer.  
All made by the Davis & Furber Machine Co., North Andover, Mass.



WEAVE ROOM



### *Braiding Machinery*

One 24 Line Hercules Braider.

One 12 Line Braider.

One Tubular Braider.

One Sautach Braider.

All made by the New England Butt Co., Providence, R. I.

### *Silk Preparing Machinery*

One Winder, Atwood Machine Co., Stonington, Conn.

One Ribbon Quiller, Atwood Machine Co., Stonington, Conn.

One Warper and Beamer, Swiss Style, Atwood Machine Co., Stonington, Conn.

One Double Frame, Atwood Machine Co., Stonington, Conn.

The power for the warp preparing section is supplied through a 7½ h. p. 220 volt General Electric Co. motor.

### *Plain Looms*

One Plain Northrup Loom, Draper Co., Hopedale, Mass.

One Plain Print Cloth Loom, Whitin Machine Works, Whitinsville, Mass. To this is attached a Kip-Armstrong Warp Electric Stop Motion.

One Plain Print Cloth Loom, Mason Machine Works, Taunton, Mass.

One Kilburn & Lincoln Plain Loom.

Nine Saco-Lowell Shops Plain Looms.

One English Loom, Hattersley.

One Improved Northrop Loom, fine sateen, Draper Company, Hopedale, Mass.

One Eight Harness Corduroy Loom, Draper Company, Hopedale, Mass.

One Side Cam Twill Loom, Whitin Machine Works, Whitinsville, Mass.

One Five Harness Sateen Loom, Saco-Lowell Shops, Lowell, Mass.

One 32 inch 2 x 1 Loom, Saco-Lowell Shops, Lowell, Mass.

One Harriman Automatic Shuttle Changing Loom.

One Lewiston Machine Co. Loom, 4 harness, side cam.

One Crompton Jean Loom.

Four of the above looms are equipped with Abbott cleavers made by The Abbott Wire and Cast Steel Warp Cleaving Co., Lisbon Falls, Me.

### *Fancy Looms*

One Northrop Loom with dobby, Draper Co., Hopedale, Mass.

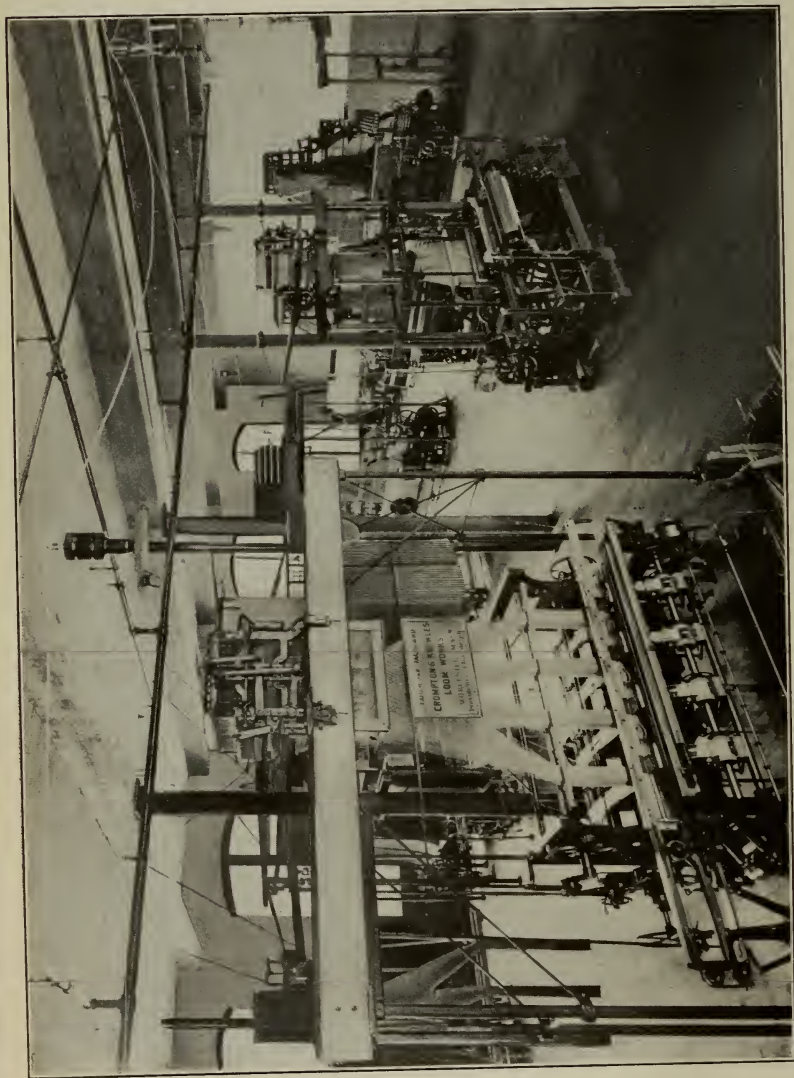
One Lewiston Machine Company Bag Loom.

One Knowles Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.

One Crompton Gingham Loom, 4 x 1 boxes, Crompton-Knowles Loom Works.

One Crompton Towel Loom, 2 x 1 boxes, Crompton-Knowles Loom Works.





WEAVE ROOM, JACQUARD SECTION

- One Crompton Lappet Loom, with 16 harness dobby, Crompton-Knowles Loom Works.
- One Knowles Fancy Cotton Loom, 20 harness dobby, 4 x 1 boxes, for fancy leno work, Crompton-Knowles Loom Works.
- One Knowles Fancy Cotton Loom, 25 harness dobby, Crompton-Knowles Loom Works.
- One Crompton Fancy Cotton Loom, single cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Stafford Ideal Loom, 16 harness, automatic shuttle changing device. Stafford Loom Co., Readville, Mass.
- One Knowles Gem Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Worsted Loom, 24 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Crompton Fancy Loom, 6 x 1 double cylinder, 20 harness dobby, Crompton-Knowles Loom Works.
- One Twenty Harness Dobby Loom, Whitin Machine Works, Whitinsville, Mass.
- One Crompton & Knowles Heavy Loom, 20 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Knowles Blanket Loom, 25 harness dobby, 4 x 1 boxes, Crompton-Knowles Loom Works.
- One Knowles Worsted Loom, 32 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Knowles Heavy Woolen Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works.
- Three Crompton & Knowles Intermediate Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works. One of these looms is operated by a direct connected  $\frac{3}{4}$  h. p. 220 volt 3 phase 60 cycle General Electric motor.
- One Model Dobby Attachment.

#### *Jacquard Looms*

- One Knowles Fancy Loom, single lift Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, double life Jacquard, Crompton-Knowles Loom Works.
- One Knowles Fancy Loom, Jacquard tied up for leno, Crompton-Knowles Loom Works.
- One Knowles Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Knowles Loom, 4 x 4 boxes, 54 inch, with 600 hook double lift double cylinder McMurdo Jacquard Head. Tied up for damask napkin designs.
- One Crompton Ingrain Carpet Loom, 4 x 4 boxes, Crompton-Knowles Loom Works.



ORGANIC CHEMISTRY LABORATORY

- One Stafford Silk Loom, 1200 hook Halton Jacquard.
- One Crompton & Knowles 72 in. Tapestry Loom with 2600 hook Halton Jacquard Head.
- One 400 hook single lift, Schaum & Uhlinger Jacquard mounted for 4 bank narrow fabric loom. This loom is driven by a direct connected  $\frac{1}{2}$  h. p. 220 volt 60 cycle Westinghouse motor.
- One 840 hook double lift, single cylinder Jacquard on Crompton-Knowles 4 bank ribbon loom.
- One 800 hook, double lift Knowles Gem Silk Brocade Jacquard Machine, 4 x 4 boxes, Crompton-Knowles Loom Works.
- One Felix Tonnar German Plush Loom with 400 hook Crompton-Knowles Jacquard Head.
- One Skinner Brussels Carpet Loom three-quarters wide equipped with 1280 hook Jacquard head. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### *Card Cutting Machines*

- One Jacquard Fine Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French Index Card Cutting Machine. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

#### **Hand Loom Weaving**

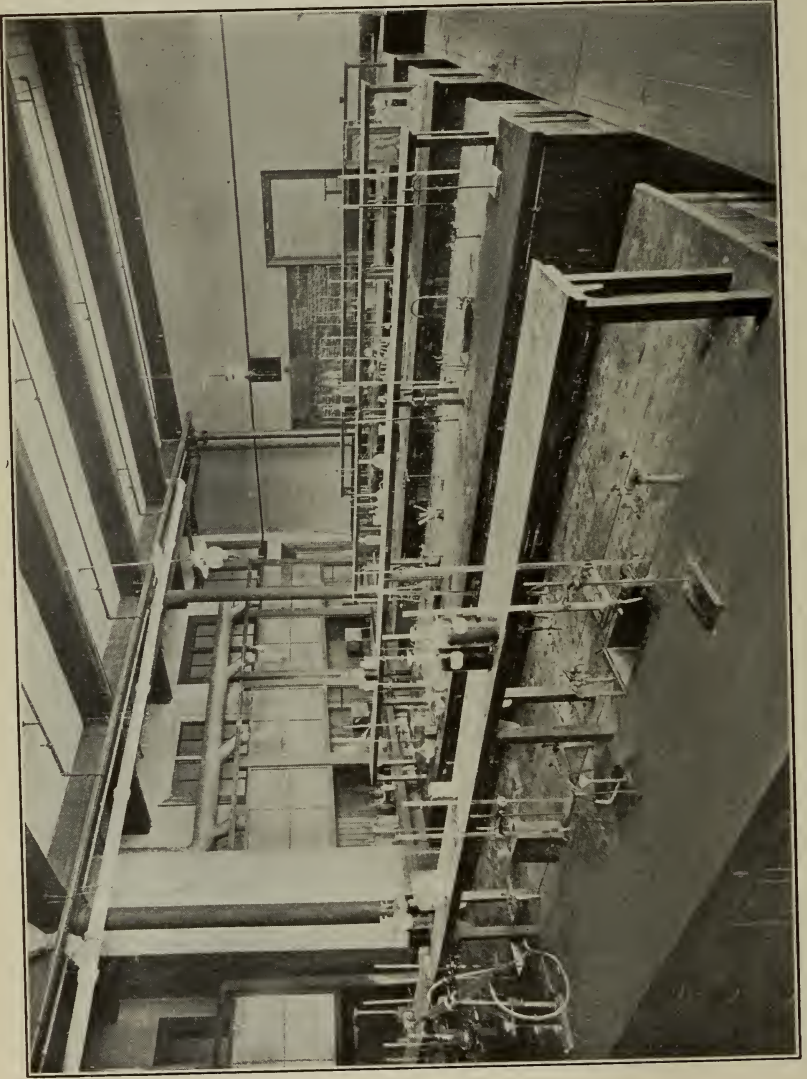
- Twelve Hand Looms, 3 x 3 boxes, 20 harness dobby.
- Eight Hand Looms, 4 x 4 boxes, 24 harness dobby.
- Eight Hand Looms, 3 x 3 boxes, 32 harness dobby.
- Six Hand Looms, 4 x 4 boxes, 30 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 32 harness dobby.
- Two Hand Looms, 4 x 4 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 200 hook Jacquard.
- Two Hand Looms, 3 x 3 boxes, 600 hook Jacquard.
- One Hand Loom, 48 harness.
- Two Hand Looms with treadles.
- Pattern Warping Stands.
- Beaming, drawing-in stands, etc.

### **CHEMISTRY AND DYEING DEPARTMENT**

#### *Chemical Laboratories*

- The General Chemistry and Qualitative Analysis Laboratory includes:
- One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in Chemistry; also gas and water fittings, reagents and sinks.





QUANTITATIVE LABORATORY



Four Large Double Hoods,  
Two Steam Baths.  
Two Parson's Automatic Gas Generators.

#### *Quantitative Laboratory*

One No. 1 Steam Heated Water Still made by Barnstead Water Still Co.  
One Steam Drying Closet and Several Drying Ovens.  
One Large Steam Bath.  
One Electrolytic Table.  
Five Hoods.  
Fifty laboratory desks, each fully provided with apparatus.

#### *Balance Room*

One Large Christian Becker Analytical Balance.  
Seven Small Christian Becker Analytical Balances.  
One Standinger Analytical Balance.  
One Eimer & Amend Analytical Balance.  
One H. L. Becker's Sons & Co. Analytical Balance.

#### *Organic Laboratory*

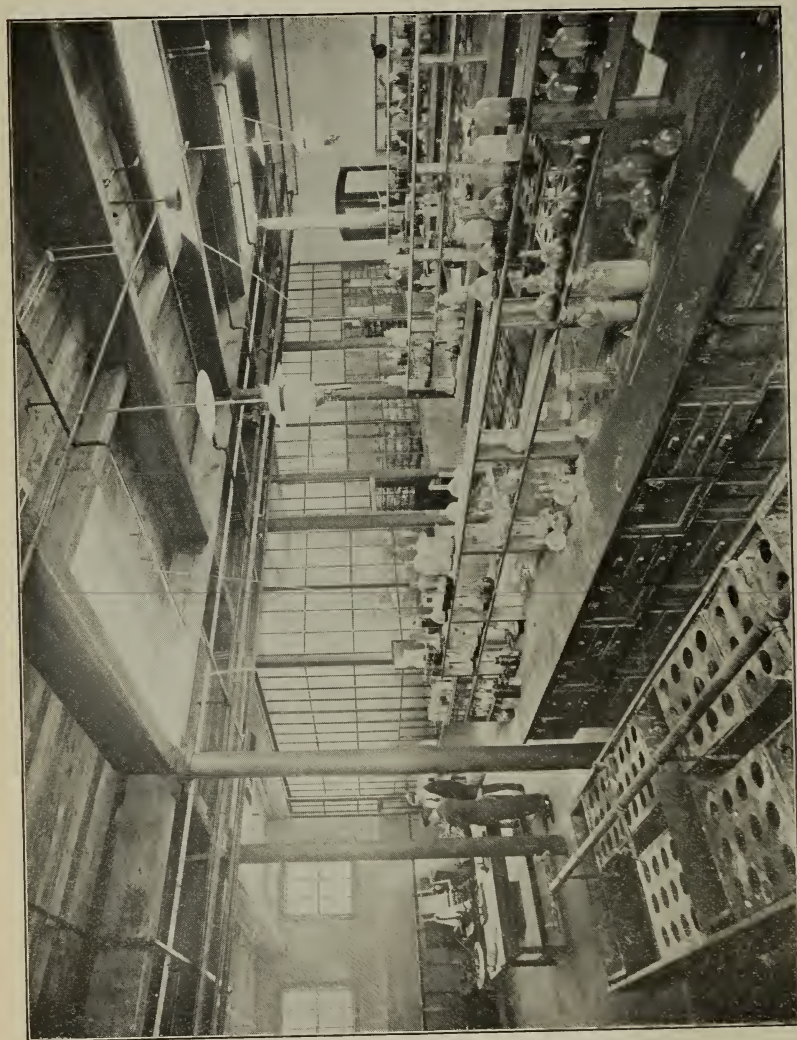
One Electric Combustion Furnace.  
Three Gas Combustion Furnaces.  
One Lothar-Meyers Furnace for table.  
Two Autoclaves.  
One Ball Mill.  
One automatic stirring apparatus.  
One 3 h. p. Holtzer-Cabot Electric Co.'s motor.  
Laboratory tables, lockers, hoods, electric ovens and heating apparatus, etc.

#### *Instructor's Laboratory*

Adjacent to the Organic Laboratory is arranged an Instructor's Laboratory equipped with Steam Bath, Hood, Cases and Working Benches.

#### *Microscopic, Photographic and Colorimetric Laboratory*

Two benches for microscopical work.  
Five Bausch & Lomb Compound Microscopes.  
One Natchet et Fils Compound Microscope.  
One Tintometer.  
One Ives Colorimeter.  
One Polariscope made by Franz Schmidt & Haensch, Berlin, Germany.  
One Spectroscope made by John Browning, London, England.  
One Bausch & Lomb Model G. Photomicrographic apparatus equipped with a B. & L. D. D. S. Microscope and all necessary apparatus.



EXPERIMENTAL DYEING LABORATORY

Desks and shelves for the apparatus and reagents necessary for this branch of the work.

Adjoining this Laboratory is a dark room for Spectrum Analysis, Photometric and Photographic Work, etc.

#### *Assistant Instructor's Laboratory.*

One Large Case of Chemicals.

One Double Hood.

One Copper Water Bath.

One Soapstone Sink with a drain board.

Benches, desks and complete fittings for water, gas and suction.

#### *Private Laboratory*

One Thoenner Balance.

One Large B. & L. Microscope.

One K. P. Bausch & Lomb Binocular Microscope.

One Case of Chemicals and Apparatus.

Three Laboratory Benches, with necessary fittings.

One Large Hood.

One Steam Bath.

One Experimental Dye Apparatus.

One Slate Sink and Drain Board.

One Steam Jacketed Kettle.

#### *Chemical Lecture Room*

Is provided with a lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.

An electric arc reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats are provided for eighty students, and are arranged on a raised floor so that every student has a full view of the lecture table.

This room contains various collections of dyestuffs and chemicals for exhibition and for lecture demonstration.

#### *Experimental Dyeing Laboratory*

The dyeing laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

Fifty-six Steam Coil Experimental Dyeing Baths.

One Drying Chamber.

One Ageing Chamber.

One Hot Water Tank.

#### *Dye Stuff Room*

Adjacent to the Experimental Dyeing Laboratory there has been provided a well lighted room for the storage of a great variety of dyestuffs.



INDUSTRIAL CHEMISTRY LABORATORY



Steel shelving has been arranged so that the samples are easy of access. All samples are catalogued in a card file, thus facilitating their use. In this same room is provided a sink and cement table with balances.

#### *Experimental Printing Laboratory*

- One Calico Printing Machine, made by Mather & Platt, Manchester, England.
- One Iron Jacketed Steaming Chamber from A. Edmeston & Son, Patricroft, England.
- One set of Steam Jacketed Copper Kettles.

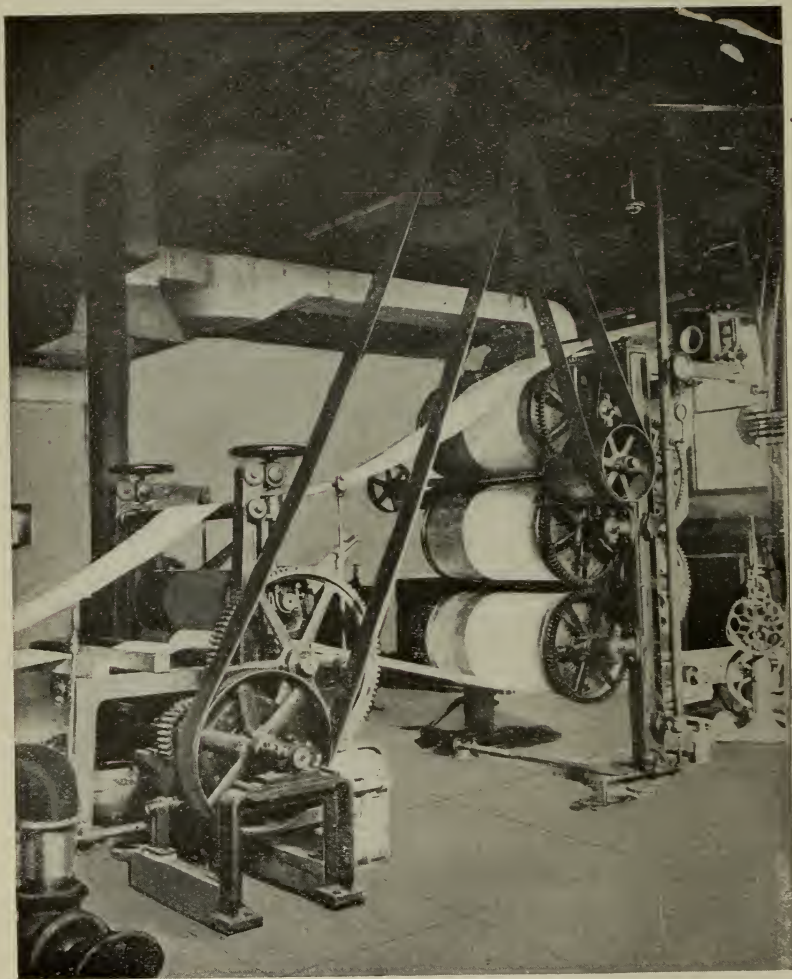
#### *Fuel and Oil Analysis Laboratory*

- Mather Bomb Calorimeter, with complete outfit.
- Emerson Bomb Calorimeter, with complete outfit.
- Parr Calorimeter.
- Abbe Refractometer.
- Torsion Viscosimeter.
- Tagliabue Viscosimeter.
- Tagliabue Cold Test Apparatus.
- Pensky Martin Oil Tester.
- N. Y. State Oil Tester.
- Sartorius Specific Gravity Balance.
- Two Becker Analytical Balances.
- Gas Muffle Furnace.
- Kny Scherer Oil Tester.
- Graefe Gas Calorimeter.
- Orsat Gas Analysis Apparatus.
- Laboratory Tables, Lockers and Hoods.

#### *Industrial Chemistry Laboratory*

- One Filter Press, Type E, T. Shriver and Co.
- One Single Acting Triplex Plunger Pump, Gould's Mfg. Co.
- One Vacuum Drying Apparatus, Norman Hubbard's Sons.
- One Surface Condenser, Norman Hubbard's Sons.
- One Packard Vacuum Pump, Norman Hubbard's Sons.
- One Vacuum Evaporator, Swenson System, American Foundry and Machine Co.
- One Centrifugal, C. H. Chavant and Co.
- One Double Jar Mill, F. I. Stokes and Co.
- One Sturtevant Ore Crusher.
- One Sturtevant Pulverizer.
- Ten Copper Steam Baths, D. H. Wilson and Co.
- One 36 in. Ventilating Fan, Mass. Fan Co.
- One Autoclave.
- Lockers and Tables.
- Power for this department is furnished through a  $7\frac{1}{2}$  h. p. 220 volt General Electric Co.'s motor.





VIEW IN COMMERCIAL DYEING LABORATORY

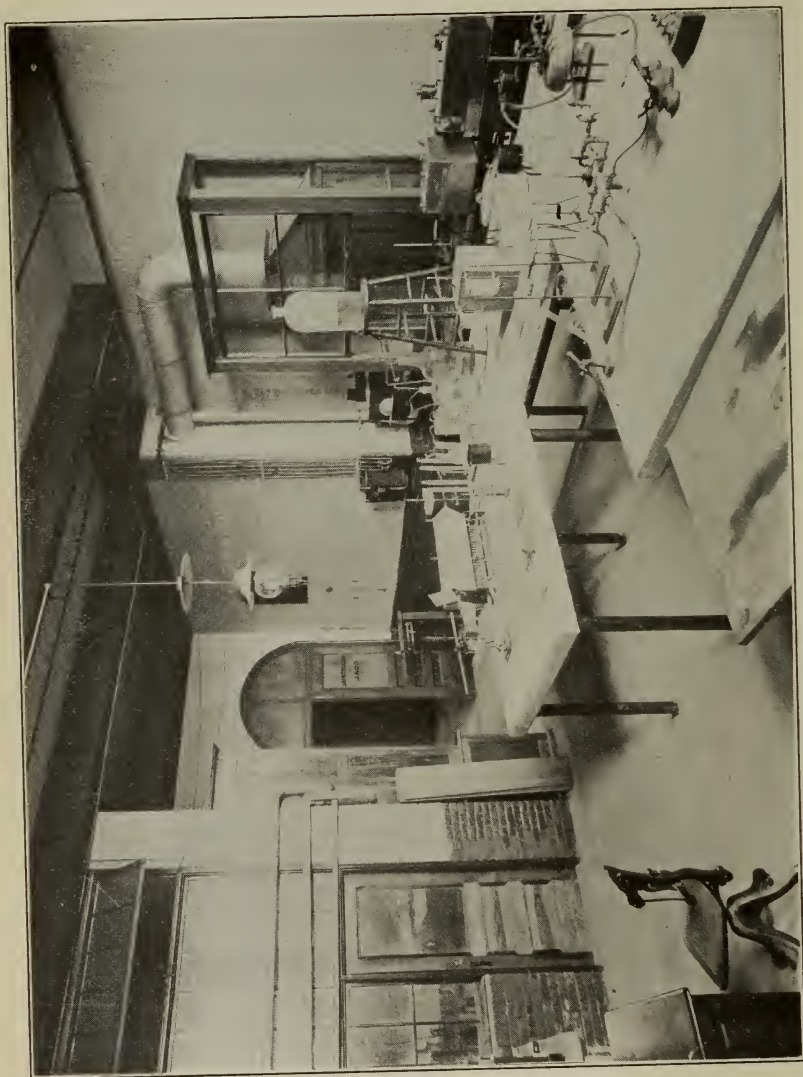
### *Commercial Dyeing Laboratory*

- One Kier, Atlantic Works, East Boston, Mass.
- One small Kier, fitted with E. D. Jefferson's circulating device.
- One Electrolyzer for manufacturing bleaching solutions, The National Laundry Machine Co., Dayton, Ohio.
- One Permutit Filter, The Permutit Co., New York City.
- One Mercerizing Machine.
- One Raw Stock Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Yardley, Pa.
- One Yarn Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Yardley, Pa.
- One Jig Dyeing Machine, The Textile-Finishing Machinery Co., Providence, R. I.
- One set of Drying Cans, The Textile-Finishing Machinery Co., Providence, R. I.
- One Chain Dyeing Machine, T. C. Entwistle Co., Lowell, Mass.
- One Raw Stock Drying Table, Philadelphia Textile Machinery Co., Philadelphia, Pa.
- One Padding Mangle, Arlington Machine Works, Arlington, Mass.
- One Hydro-Extractor, W. H. Tolhurst & Son, Troy, N. Y.
- One Experimental Dyeing Machine, The Psarski Dyeing Machine Company, Cleveland, Ohio.
- One Experimental Dyeing Machine, equipped for raw stock or yarns, Hussong Dyeing Machine Co., Croweville, N. J.
- One Sample Piece Dyeing Machine, Rodney Hunt Co., Orange, Mass., equipped with an automatic temperature and pressure regulating apparatus made by C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.
- One Laboratory Dyeing Machine, Franklin Process Co., Providence, R. I.
- Seven Dye Tubs.
- One Reeves' Variable Speed Device.
- Two Trucks.
- The power for this department is supplied through a 15 h. p. 220 volt, Allis-Chalmers Co.'s motor.

### **FINISHING DEPARTMENT**

#### **Woolen and Worsted**

- One 2 string Washer, Rodney Hunt Co., Orange, Mass.
- One Fulling Mill, Rodney Hunt Co., Orange, Mass.
- One Sample Fulling Mill, James Hunter & Co., North Adams, Mass.
- One Up and Down Dry Gig, Curtis & Marble, Worcester, Mass.



FUEL AND OIL LABORATORY

- One Rolling and Stretching Machine, Curtis & Marble, Worcester, Mass.
- One Up and Down Wet Gig, Curtis & Marble, Worcester, Mass.
- One Steam Finishing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 3 burner Singeing Machine, adapted for Cotton, Silk or Worsted Goods, Curtis & Marble, Worcester, Mass.
- One Two Cylinder Double Acting Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 4 Cylinder Sanding and Polishing Machine, Curtis & Marble, Worcester, Mass.
- One Kicker Mill, James Hunter & Co., North Adams, Mass.
- One 6-4 Double Shear, Parks & Woolson, Springfield, Vt.
- One Single Shear, Curtis & Marble. Donated by Mass. Mohair Plush Co., Lowell, Mass.
- One Dewing Machine, G. W. Voelker & Co., Woonsocket, R. I.
- One 6-4 Voelker Rotary Press, G. W. Voelker & Co., Woonsocket, R. I.
- One Tentering and Drying Machine, John Heathcote, Providence, R. I.
- One Single Crabbing Machine, H. W. Butterworth & Son, Philadelphia, Pa.
- One 72 in. Woolen Napper, Davis & Furber, North Andover, Mass.
- One 32 in. Basket Hydro-Extractor, W. H. Tolhurst, Troy, N. Y.
- One A. W. C. Measuring and Weighing Machine, Parks & Woolson, Springfield, Vt.
- One Lintz & Eckhardt Cloth Numbering Machine, Improved by Durbrow & Hearne Mfg. Co., New York.
- One Steam Press for Underwear, United States Hoffman Co., Syracuse, N. Y.
- One Sewing Machine, Birch Brothers, Somerville, Mass.
- Soap tanks, perch, burling and measuring tables.
- The power for this department is supplied through a 15 h. p. 220 volt Allis-Chalmers motor.

#### **Cotton Finishing Machinery**

- One 40 in. Inspecting and Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 44 in. No. 25 Railway Sewing and Rolling Machine, Curtis & Marble, Worcester, Mass.
- One 44 in. Cotton Shearing Machine, Type No. 34, Curtis & Marble, Worcester, Mass.
- One 44 in. No. 3 Steam Calender Rolling Machine, Curtis & Marble, Worcester, Mass.
- One 40 in. Cloth Folder, Curtis & Marble, Worcester, Mass.
- One 40 in. Winder and Measurer, Curtis & Marble, Worcester, Mass.





MACHINE SHOP



- One set 44 in. Shear Blades for grinding purposes, Curtis & Marble, Worcester, Mass.
- One 48 in. No. 4 Opening, Sewing and Re-rolling Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One No. 1 Hand Power Portable Railway Sewing Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One 40 in. 3 Roll Water Mangle, with husk and brass rolls and usual attachments, The Textile-Finishing Machinery Co., Providence, R. I.
- One 48 in. Mycock Scutcher, for the Water Mangle, Thos. Leyland & Co., Boston, Mass.
- One 40 in. Mycock Cloth Expander, for the Water Mangle, Thos. Leyland & Co., Boston, Mass.
- One 40 in. 2 Roll Starch Mangle, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Upright Drying Machine with 10 copper cylinders, The Textile-Finishing Machinery Co., Providence, R. I.
- These are equipped with Files Dry Can System, Files Engineering Co., Inc., Bridgeport, Conn.
- One 16 x 24 in. Bronze Covered Stretcher, for the Drying Cans, C. A. Luther & Co., Providence, R. I.
- One 40 in. double Bristle Stretcher, for Drying Cans, American Finishing Machinery Co., Boston, Mass.
- One 40 in. Sprinkler, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. 5 Roll Universal Calender, with chasing attachment, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Mycock Cloth Expander, for the calender, Thos. Leyland & Co., Boston, Mass.
- One 40 in. Tommy Dodd Starch Mangle, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- One Direct Driven 44 in. 50 ft. Vibratory Tenterring Machine, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- This machine is driven separately by a  $7\frac{1}{2}$  h. p. variable speed 220 volt direct current General Electric Co.'s motor and is equipped with The Schwartz Automatic Electric Guider, made by L. H. A. Schwartz & Co., Boston, Mass.
- One Pasting Table with Plate, Textile Finishing Machinery Co., Providence, R. I.
- Two Copper Steam Jacketed Starch Kettles.
- The power for the rest of the department is supplied through a 25 h. p. 220 volt Westinghouse direct current motor.

## ENGINEERING DEPARTMENT

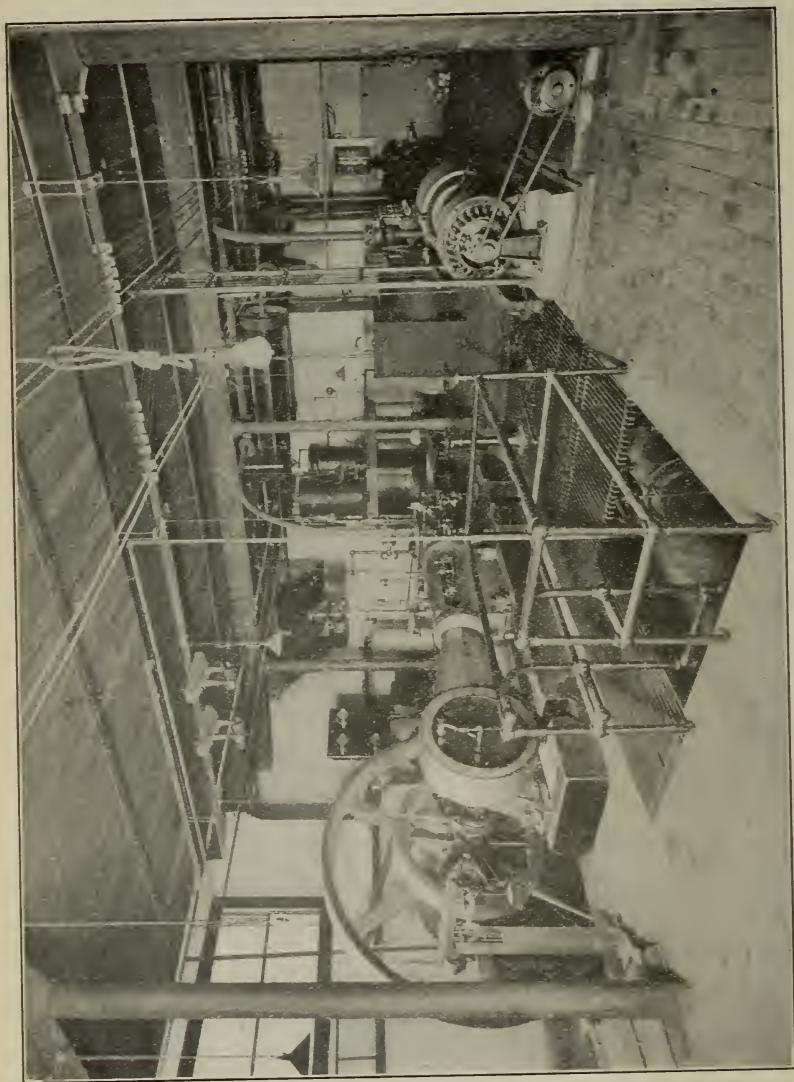
### STEAM ENGINEERING LABORATORY

The engineering laboratory contains the following equipment :



MECHANICAL DRAWING ROOM

- 50 H. P. Allis-Chalmers Corliss Steam Engine (Reliance type) for experimental purposes arranged to operate condensing or non-condensing, and direct connected to an Alden absorption dynamometer.
- Wheeler Surface Condenser (200 sq. ft. surface) with 5 in. x 6 in. x 6 in. x 7 in. combined air and circulating pump.
- 25 K. W. Kerr Steam Turbine (7 stage) direct connected to 25 K. W. Richmond Electric Co. alternating current generator and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low pressure turbine in conjunction with the Allis Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.
- 5000 gallon Pressure Tank for heads up to 300 ft. and connections for experimental work.
- Two 2500 gallon Concrete Storage Tanks.
- Complete set of Weighing and Suction Tanks on Fairbanks Standard scales.
- Deane Triplex Power Pump 4 in. x 6 in.
- One Hays Flue Gas Collector and Instruments for determination of  $\text{CO}_2$ , O and CO.
- One Throttling Calorimeter.
- One Separating Calorimeter.
- Schaeffer & Budenberg Mfg. Co.
- One 2 in. Centrifugal Pump made by Lawrence Machine Co. and direct connected to a 3 H. P. General Electric Co. 220 volt induction motor.
- Miscellaneous equipment of Pressure, Vacuum and Draft Gages, Thermometers, etc.
- Clayton Air Compressor (belted type) 6 in. x 6 in.
- Centrifugal Pump, 2 inch (belted type), Lawrence Machine Company, Lawrence, Mass.
- Two Sturtevant Fan Blowers for experimental work.
- Metropolitan Injector. 3-4 inch.
- Differential Transmission Dynamometer.
- Variable Speed Transmission.
- One dead weight tester for calibrating pressure gages.
- One vacuum pump and mercury column for calibrating vacuum gages.
- Two Steam Engine Indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types).
- One Gas Engine Indicator. Speed Counters and Tachometers. Apparatus for investigating the rate of heat transmission for steam heating coils and condenser tubes.
- All steam supplied to the laboratory passes through a 4 inch horizontal Cochrane steam separator to insure dry steam for experimental work.



ENGINEERING LABORATORY



Buff & Buff Engineers Transit.

Philadelphia Level Rod.

Apparatus for testing friction and slip of belts and pulleys.

#### ELECTRICAL ENGINEERING LABORATORY

Standard Marine Finished Slate Switchboard made up of:

One Westinghouse A. C. Generator Panel 25 K. W.

One Westinghouse A. C. Generator Panel 15 K. W.

One Circuit Panel for lights and motors.

One 15 K. V. A. 220 Volt 3-Phase 60 Cycle Synchronous Motor.

One 24 H. P. 220 Volt D. C. Allis-Chalmers Co. Motor.

One 10 H. P. 220 Volt D. C. General Electric Co. compound wound motor.

One 7.5 H. P. 220 Volt 3-Phase 60 Cycle General Electric Induction Motor.

One 10 H. P. 220 volt 3-Phase Induction Motor, General Electric Company.

One 4 H. P. General Electric Dynamometer which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220 Volt 60 cycle 3-phase on one side and delivers or receives 220 Volt direct current.

One 5 K. W. 220 Volt 440 Volt Transformer.

Westinghouse Portable Polyphase Wattmeter with current transformers.

Three General Electric A. C. Wattmeters.

Two General Electric A. C. Ammeters.

One General Electric A. C. Voltmeter.

Two 250 Volt D. C. Weston Portable Voltmeters.

One Weston D. C. Portable Millivoltmeter. 2 ampere and 20 ampere shunts for use with the above instrument.

One 150 amp. D. C. Weston Portable Ammeter.

Two Weston Model 45 D. C. Ammeters.

Two Weston Model 260 D. C. Ammeters.

One Weston Model 260 D. C. Voltmeter.

One Thompson 50 ampere 2 wire 220 volt recording Wattmeter, General Electric Co.

One Weston Laboratory Standard Voltmeter with multiplier to 600 volts.

One Small Wheatstone Bridge with D'Arsonval Wall Galvanometer.

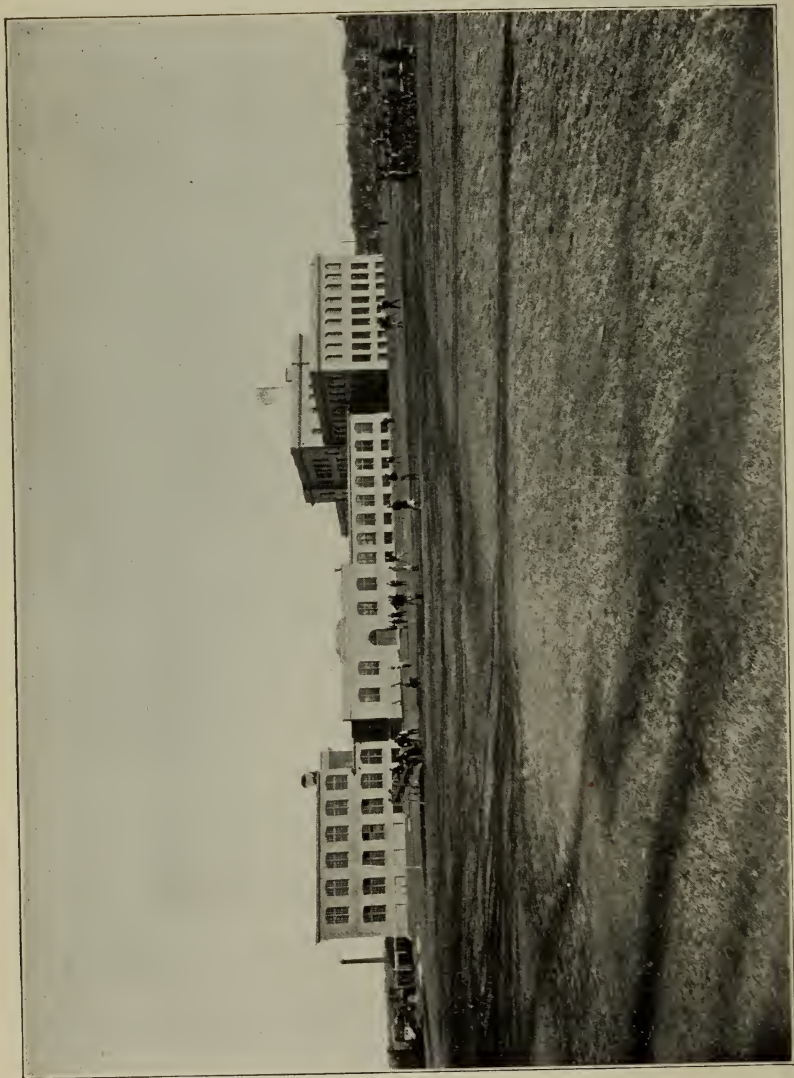
One Simple Galvanometer.

One Leeds & Northrup Potentiometer No. 7551.

One Wall Galvanometer L. & N. 2210 D'Arsonval type

One Wheatstone Bridge L. & N. No. 4725 A. with D'Arsonval Galvanometer L. & N. tripod type.





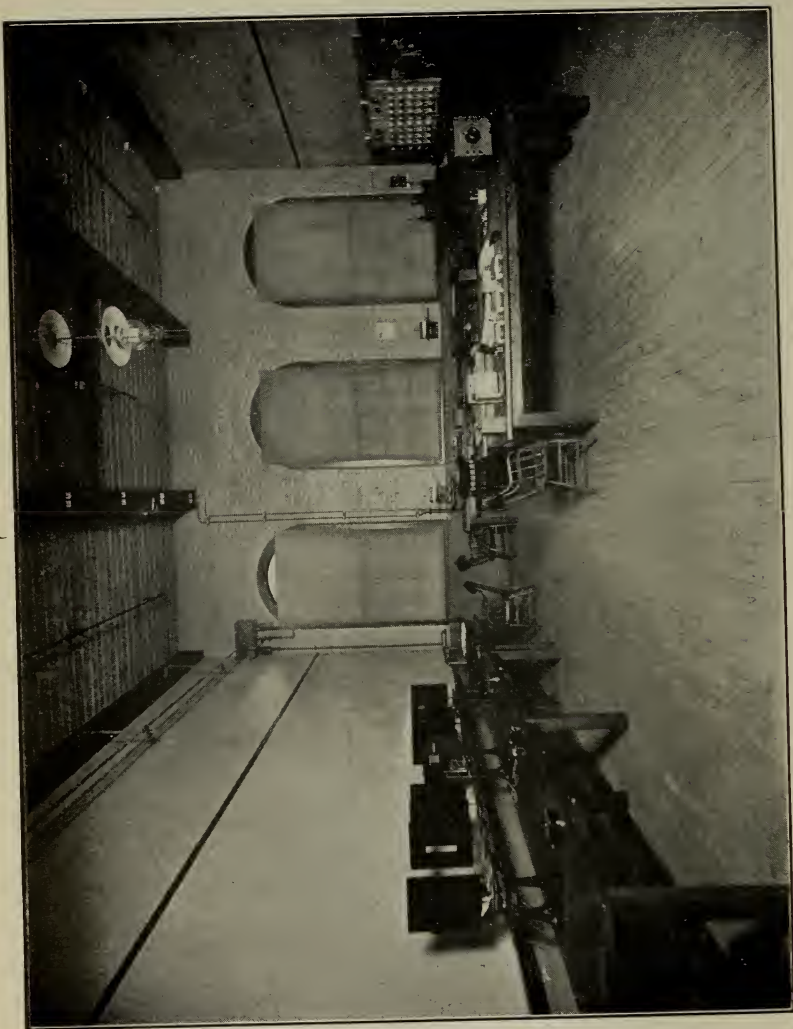
ATHLETIC FIELD AND SCHOOL BUILDINGS

One Slide Wire Bridge, Leeds and Northrup.  
 One Portable Galvanometer No. 2323, Leeds & Northrup.  
 One Ohmmeter, Leeds & Northrup.  
 One Electro-Dynamometer, Leeds & Northrup.  
 One Weston Standard Cell.  
 Two Tachometers.  
 One Potential Phase Shifter made by States Co., Hartford, Conn.  
 One Standard Leeds & Northrup Photometer with Lummer-Brodhun  
 Screen Compound Rotator and Rotating Sector, Screens, etc.  
 One Macbeth Illuminometer, Leeds & Northrup.  
 One Esterline Portable Curve Drawing Wattmeter designed for Poly-  
 phase A. C. or Direct Current power measurements. Mechanism  
 to vary speed of paper.  
 Two Hand Feed Arc Lamps for stereopticons.  
 Resistance boxes of various sizes and other apparatus necessary for  
 commercial testing of lamps, motors, etc.  
 Two cell storage battery for constant voltage current supply.  
 An Exhibition Board containing samples of the Chloride-Exide  
 Storage Battery Plates donated by the Electric Storage Battery  
 Co. of Philadelphia.  
 Miscellaneous apparatus for experiments in Mechanics, Heat, Light,  
 Sound and Electricity.

### Machine Shop

The equipment of the machine shop is as follows:

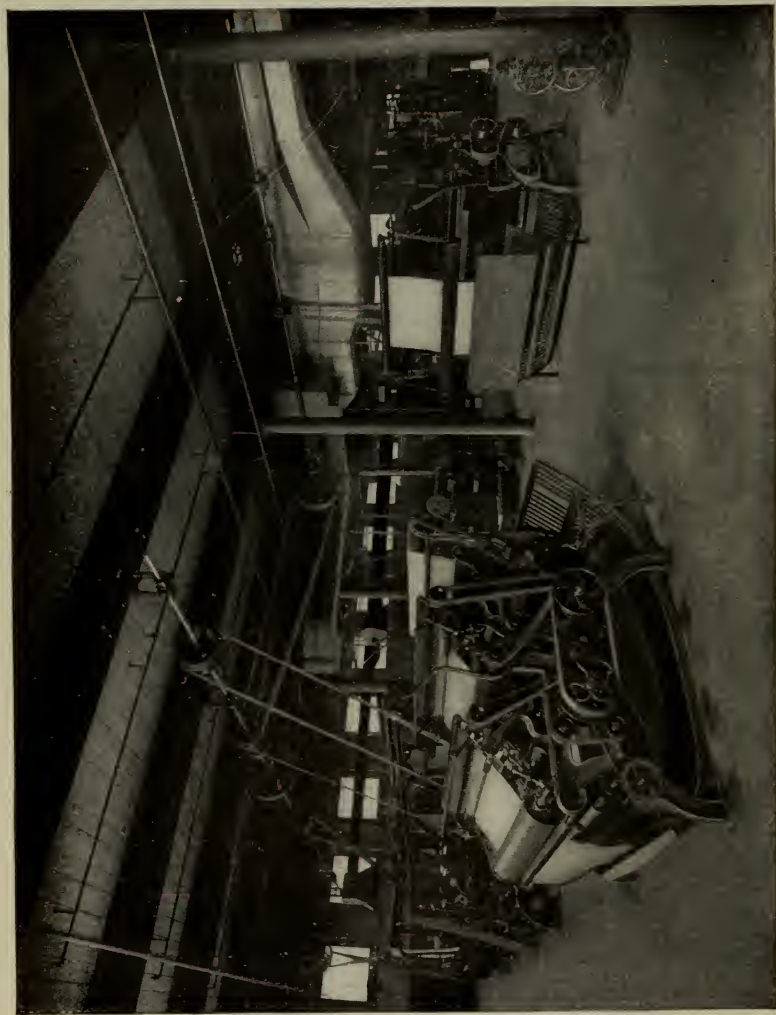
Four Standard Engine Lathes, 13 inch swing, 6 ft. bed, from Flather  
 & Co., Nashua, N. H.  
 Three Standard Engine Lathes, 14 inch swing, 6 ft. bed, from Flather  
 & Co., Nashua, N. H.  
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from F. E. Reed  
 Co., Worcester, Mass.  
 One Engine Lathe, 18 inch swing, 10 ft. bed, from Flather & Co.,  
 Nashua, N. H.  
 One Engine Lathe, 18 inch swing, 6 ft. bed, from Champion Tool  
 Works, Cincinnati, Ohio.  
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from S. H. Put-  
 nam Sons, Fitchburg, Mass.  
 Five Speed Lathes, 17 inch swing, 5 ft. bed, from J. G. Blount, Everett,  
 Mass.  
 One No. 1 Universal Milling Machine, with all three feeds automatic,  
 from Kempsmith Mfg. Co., Milwaukee, Wis.  
 One 24 in. x 24 in. 6 ft. Planer, from the Mark Flather Planer Co.,  
 Nashua, N. H.  
 One 23 inch Upright Drill with back gears and power feed, from J. E.  
 Snyder & Son, Worcester, Mass.



ELECTRICAL MEASUREMENT LABORATORY

- One 14 inch Single Sensitive Drill from the Stanley Mfg. Co., Lawrence, Mass.
  - One No. 1 Universal Grinder from Landis Tool Co., Waynesboro, Pa.
  - One 20 inch Wet Tool Grinder from J. G. Blount, Everett, Mass.
  - One 12 inch, Two Wheel, Dry Grinder from J. G. Blount, Everett, Mass.
  - One American Twist Drill Grinder from the Heald Machine Co., Worcester, Mass.
  - One Type 1 B Portable Electric Grinder from the Cincinnati Elec. Tool Co., Cincinnati, Ohio.
  - One 30 inch Grindstone and Frame from the Athol Machine Co., Athol, Mass.
  - One Single Spindle Centering Machine from D. E. Whiton Machine Co., New London, Conn.
  - One 15 inch Shaper from Potter & Johnson, Pawtucket, R. I.
  - One Power Hack Saw from the Fairbanks Co., Boston, Mass.
  - One Cold Saw from John T. Burr & Son, Brooklyn, N. Y.
  - Two Blacksmith Forges, Anvils and Tools are also provided.
  - One Gas Oven for hardening and tempering tools.
  - One Eureka Metal Power Saw. Manning, Maxwell & Moore.
  - One Type "C C" Electric Drill. Cincinnati Electric Tool Co.
  - One Universal Milling Attachment for Kempsmith Milling Machine, Taylor Machinery Co.
  - One Hisey Type "B"  $\frac{1}{2}$  H. P. Tool Post Grinder. Taylor Machinery Co.
  - One No. 2 Cory Bench Straightener. Manning, Maxwell & Moore.
  - One No. 3 Universal Cutter and Reamer Grinding Machine. Brown and Sharpe.
- These tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.
- A well equipped tool room contains a selected stock of the best makes of small tools such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc.
- The following wood working tools are also provided in addition to benches for pattern making:--
- One Pattern Maker's Lathe, 16 in. swing, 8 ft. bed, from Fay & Scott, Dexter, Me.
  - One 32 in. Band Saw from the Crescent Machine Co., Leetonia, Ohio.
  - One Iron Single Saw Bench, from the Crescent Machine Co., Leetonia, Ohio.
  - One Double Saw Bench.
  - One 12 in. Buzz Planer from W. W. Carey, Lowell, Mass.





WOOLEN AND WORSTED FINISHING DEPARTMENT



The power for this department is supplied through a 10 h. p. 220 volt direct current Allis Chalmers Co.'s motor.

#### POWER, LIGHT, HEAT AND VENTILATING PLANT

In the new Power House completed in 1913, there is located the main power generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:

Two 250 h. p. Heine Water Tube Boilers equipped with Perfection grates.

One 300 H. P. Aultman and Taylor Horizontal Water Tube Boiler equipped in U. S. Rocking Grates.

One Knowles Boiler Feed Pump 6 x 4 x 6.

One Deane Boiler Feed Pump 6 x 4 x 6.

All feed water is heated and measured by 30000 lbs. Cochrane Metering Open Feed Water Heater which is provided with a Lea Recorder and a Cochrane Oil Extractor. Harrison Safety Boiler Works, Philadelphia, Pa.

In the Engine Room are located:

One Payne 14 x 14 Automatic High Speed Engine 125 H. P. Direct connected to 75 K. W. 220 Volt D. C. Bullock Generator.

One 9½ x 11¾ Nash Gas Engine of 50 H. P. four cycle type, with speed regulating clutch and a "hit and miss" governor. Direct connected to a 30 K. W. 220 Volt D. C. Bullock Generator.

One Steam Driven Ingersoll-Rand 8 x 8 Air Compressor, for use with Tarbo Heads, installed in the French Spinning Department by the G. M. Parks Co., Fitchburg, Mass.

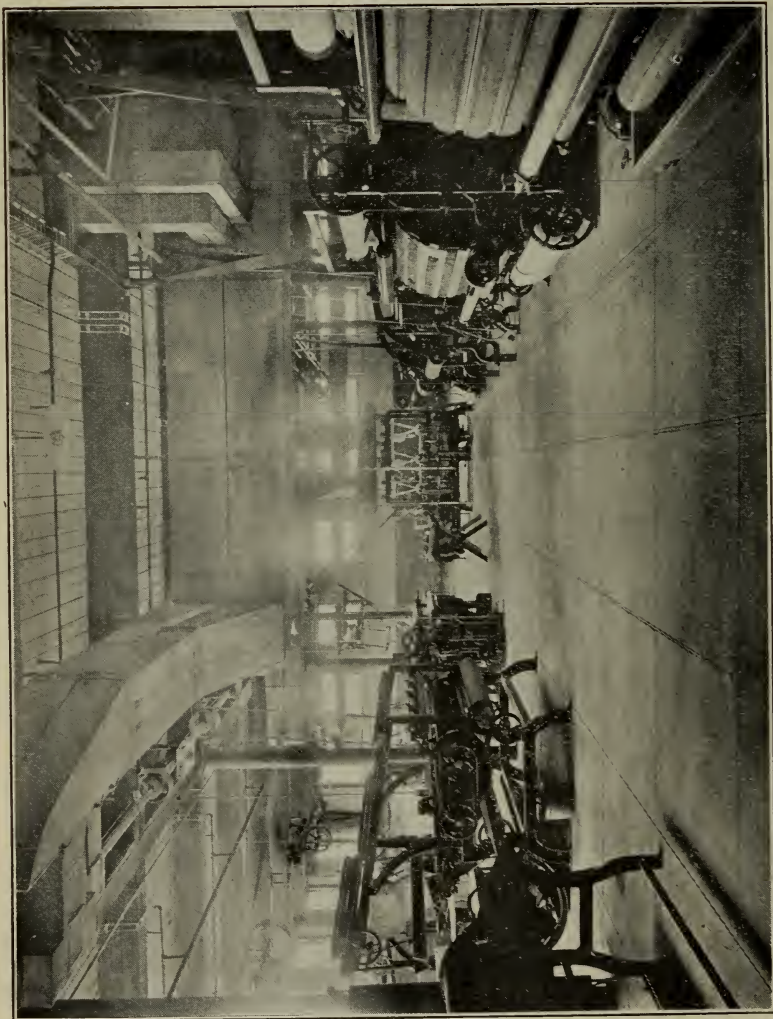
One 5½ x 6 Motor Driven Air Compressor with 20 cu. ft. storage tank for use in starting Nash Gas Engine.

One Cross Oil Filter.

The station switchboard is of Marine Finished Slate 90 inches in height and consists of two generator panels and one circuit panel. From this lead circuits supplying approximately 1200-16 candle power equivalent lamps and over 270 H. P. in motors, located in various departments of the school.

The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation and by means of the Sturtevant Double Duct Heating and Ventilating System located in the basement of Southwick Hall and by the Sturtevant Fan and Heater located in the basement of Kitson Hall. Direct driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.

The Humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles Triplex 4 x 4 power pump and tank.



FINISHING DEPARTMENT

## ATHLETICS

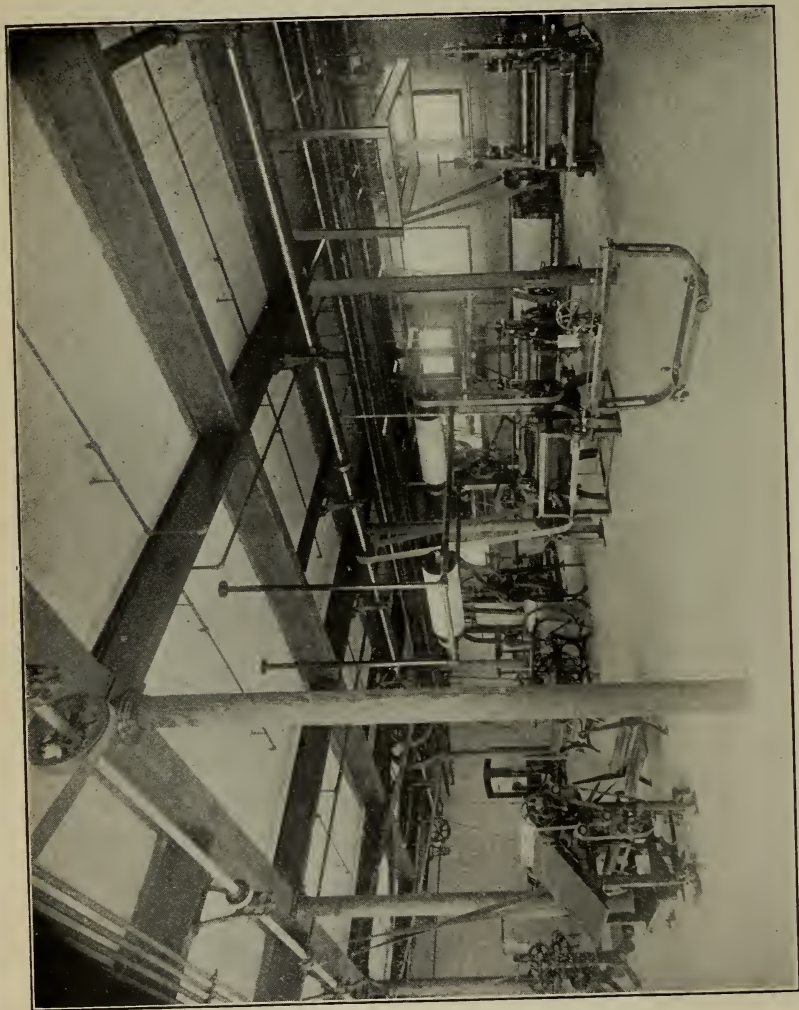
Through the generosity of Mr. Frederick Fanning Ayer, the school has been provided with a Campus and Athletic Field of about three acres. This has been carefully graded and laid out for base-ball, foot-ball and track athletics. Bleachers have been provided for use at the out-of-door games.

To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

On the upper floor of the Falmouth Street Building there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb bells, Indian clubs, a set of travelling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest, all candidates for the various athletic teams are obliged to pass a satisfactory physical examination.



COTTON FINISHING



# Day Classes

## ENTRANCE REQUIREMENTS

### Degree Courses

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

#### Required Subjects

	POINTS
Plane Geometry	1
Algebra A <sub>1</sub>	1½
Algebra A <sub>2</sub>	½
Elementary German A (two years) or Elementary French A (two years)	2
English	3
History { American or Mediaeval and Modern or English }	1
<hr/>	
	9

#### Elective Subjects

	POINTS
Physics	1
Chemistry	1
Solid Geometry	1
Trigonometry	½
Mechanical Drawing	1
Mechanic Arts	1
History { American	1
Mediaeval and Modern	1
English	1
Elementary French or Elementary German } Two years	2
Advanced French or German (one year in addition to requirements of Elementary French A or Elementary German A	1
Spanish	1
English	1





VIEW OF MANUFACTURED MATERIALS

An applicant may also be admitted on the basis of entrance examinations in which case he must pass sufficient number of the required subjects to make nine points and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.

### Diploma Courses

Candidates for admission to the Diploma Courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four year course in a High School or Academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of Algebra, one year of Plane Geometry and three years of English. An applicant is advised to complete both Algebra A1 and A2 before entering.

The subject matter covered should be the same as described under the required subjects for the degree Courses with the exception of German, French and Arithmetic, the requirements for which are given specifically under Elementary German B, Elementary French B and Arithmetic.

Subjects	POINTS
Algebra A1	1½
Algebra A2	½
Plane Geometry	1
English (Three Years)	3
English (Additional Year)	1
German (Elementary One Year)	1
French (Elementary One Year)	1
History { Mediaeval and Modern	1
{ English	1
{ American	1
Arithmetic	1

### ENTRANCE EXAMINATION

All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examinations for admission to the diploma and degree courses will be held as follows:



LIBRARY

Tuesday, June 12, 1917; Tuesday, September 4, 1917, Tuesday, June 11, 1918:

Algebra	9 A. M. to 11 A. M.
History	11 A. M. to 1 P. M.
English	2 P. M. to 4 P. M.

Wednesday, June 13, 1917; Wednesday, September 5, 1917; Wednesday, June 12, 1918:

Plane Geometry	9 A. M. to 11 A. M.
German or French	11 A. M. to 1 P. M.
Arithmetic	2 P. M. to 4 P. M.

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

## REQUIRED SUBJECTS FOR ENTRANCE

### Algebra

A1. Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equations of either numerical or literal quantities, radicals, involution, and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

A2. Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

### Plane Geometry

The usual theorems and constructions of good text books including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

### Arithmetic

(Diploma Course Requirement)

This subject should be pursued for two reasons: that the applicant may acquire familiarity with the fundamental principles and that he may acquire accuracy in solution. Special attention should be given to problems in percentage, interest, discount, square and cube root, alligation, ratio and proportion, Metric System.



## English

As secondary schools are following to a greater extent than heretofore, the requirements of the College Entrance Examination Board, it is recommended that the applicant to this school conform to the suggestions of this Board relative to English composition and Literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature and to test this examination questions will be based on the books adopted by the National Conference on Uniform Entrance Requirements. Any course of equivalent amount if made up of standard works will be accepted.

## Modern Languages

### REQUIREMENTS FOR DEGREE COURSES

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction that greater care may be used in translation.

#### *Elementary German A*

The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple German prose into good idiomatic English.

(b) Questions to test proficiency in grammar and simple English sentences to be rendered into German.

The requirements include the declension of articles, adjectives, pronouns, and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs and the elementary rules of syntax and word order.

Texts used in the language courses of any reputable High or Preparatory School will furnish reading for translation. A list of texts is offered by the College Entrance Examination Board.

#### *Elementary French A*

The entrance examination is composed of two parts, both taken, however at the same time.

(a) Translation of simple French prose into good idiomatic English.



- (b) Questions to test proficiency in grammar and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronoun; and the simpler uses of the conditional and subjunctive.

Suitable texts are suggested by the language courses of any reputable High or Preparatory School and by the requirements of the College Entrance Examination Board.

Note:—Students who have pursued two years of Elementary French as well as two years of Elementary German may present one subject to cover 2 points in the required subjects and the other to cover 2 points in the elective subjects.

#### REQUIREMENTS FOR DIPLOMA COURSES

##### *Elementary French B*

Applicants who enter for one of the three year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar and be able to translate simple French prose into good idiomatic English, also to translate into French, English sentences based on the French given for translation.

##### *Elementary German B*

Applicants who enter for one of the three year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

#### History

Applicants may offer a preparation of American History, English History or Mediaeval and Modern History.

In American History applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be prepared to consider also questions requiring an elementary knowledge of Civil Government as well as historical facts connected with the growth of this country up to the present time.

For the subject of English History or Mediaeval and Modern History the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

## **ELECTIVE SUBJECTS**

### **History**

If the applicant can present all three or any two branches of history specified he may include one as a required subject and the others in the list of elective subjects.

### **Physics**

The applicant should be familiar with the fundamental principles of Physics, particularly those considered under the headings of Mechanics, Heat, Light, Electricity and Magnetism. Text book instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in this subject if he has not been able to carry on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his note-book together with the certificate from the teacher under whom the work was performed.

### **Chemistry**

Applicants must show evidence of their familiarity with the rudiments of Chemistry. Any course given in a secondary school organized to present instruction by means of text book or lecture together with co-related laboratory work will be considered as covering the requirements. The applicant's note-book with his original notes including description of experiments, apparatus used, reactions, observations, and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the note-book.

### **Solid Geometry**

The usual theorems and constructions of good text books including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

### **Trigonometry**

The usual courses of instruction covered by the standard text books on Plane and Spherical Trigonometry will prepare an applicant sufficiently to meet this requirement.

### **Mechanical Drawing**

The applicant must have pursued such a course in Mechanical Drawing that he will be familiar with the usual Geometrical Construction Problems, Projection of Points, Lines, Planes, and Simple Solids.

Importance is laid not only upon the accuracy with which the work is performed but upon the general arrangement, appearance, and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

### **Mechanic Arts**

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfillment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.

### **Advanced French or German**

In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under Elementary French or German, they may offer the additional year as an elective.

### **English**

In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the additional year's work as one of his elective subjects.

### **Spanish**

Students offering Spanish should be familiar with elementary grammar, the common irregular verbs and be able to translate simple Spanish to English or English to Spanish. A preparation equivalent to three periods per week for two years will be acceptable.

## **GENERAL INFORMATION**

### **Preparation**

Particular stress should be laid upon a thorough grounding in mathematics including Algebra, Arithmetic and Plane Geometry, as these form the basis upon which the work of this school rests. While Solid Geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including Physics and Chemistry, serves to prepare the

student's mind for the higher branches of these subjects and their application, but neither will be considered as the equivalent of the courses in these branches given in the school.

### **Advanced Standing**

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained, they may elect such further work as their preparation will permit.

### **Attendance Card**

At the beginning of each term all students must fill out and file with the Principal on blank forms which are provided, a formal application for such subjects as are required in his course and for which he is sufficiently prepared, subject to the approval of the Principal. When an attendance card is once approved, no change can be made except through the Principal.

### **Application Blanks**

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants whether entering upon certificate from a secondary school or presenting themselves for examination.

### **Fees**

The fee for the day course is \$105 per year for residents of Massachusetts, with the exception of the Textile Engineering and Chemistry and Dyeing Courses, for which the fee is \$130 for Second, Third and Fourth Year students. For First Year students taking these courses the first term fee is \$63 and the second term fee \$54.50. For non-residents the fee for all courses is \$155 per year. The fee for students from foreign countries is \$305 per year.

Three-fifths of the fee is charged for a single term. The first term's tuition is payable on or before October 10, the balance on or before February 10, of each year. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the Trustees.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the Principal for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.



For all first year students a minimum deposit of \$20 is required to cover the cost of breakage, supplies, and apparatus and chemicals used in the chemical laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry and Dyeing Laboratories a deposit of \$20 for the first term and \$20 for the second term is required. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

### Examinations

Intermediate examinations are held every five weeks and these serve to inform the student concerning his standing and the progress made.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first term subjects are held in May and examinations for students conditioned in the Final Examinations are held in September following.

If a student fails to clear a condition at the time appointed, he will be required to repeat or drop the subject; and he cannot be admitted to subjects dependent thereon.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.

### Records and Reports of Standing

Twice during each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

### Thesis

Each candidate for the degree of the school must file with the Head of the Department in which the thesis is taken and not later than May



15, a report of original investigation, or research, written on a good quality of paper, 8 x 10 inches, with one inch margin at left, and 1-2 inch at right of each page; such thesis to have been previously approved by the head of the department in which it is made.

For all candidates for the diploma this requirement will be optional on the part of the school.

### **Graduate Course**

Graduates of technical courses of other schools are invited to communicate with the Principal with reference to special courses in the textile studies. Previous training in the sciences and the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

### **Partial Courses**

While it is assumed that in general every student will pursue some one of the regular courses it is recognized that there may be some who because of special vocations or limited time desire to obtain instruction in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparation see page 107.

Applicant must present satisfactory evidence by examination or otherwise that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in Textile Design, Decorative Art, Cloth Analysis, Weaving and Finishing. While no specified limit is given for this course the usual time has been three years. It is expected that students taking this course will devote all of the regular school session to these subjects and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

### **Special Awards of Merit**

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:

First:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in First Year Chemistry.

Second:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in First Year Chemistry.

Third:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth:—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best Thesis preparatory to graduation.

The above mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.

### **Degrees**

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in Textile Engineering. The degree of Bachelor of Textile Chemistry will be awarded for the completion of the four-year course in Chemistry and Textile Coloring.

### **Diploma**

For the present the diploma of the School will be awarded upon the satisfactory completion of any one of the regular three year courses. In cases where students obtain advanced standing at least one year's attendance is required before the diploma can be obtained.

### **Medals of Honor**

The National Cotton Manufacturer's Association offers annually a medal to that member of the third year class who shall have during his course attained the highest standing in the special subjects required by the vote of the association.

### **Attendance**

All regular students must attend all exercises of their course. Special students must attend exercises as per their Tabular View.

In case of absence explanation must be made to the instructor or the Head of the Department. The effect of such absence upon a student's standing in the respective study will rest with the Head of the Department subject to the approval of the Principal.

If a student absents himself from any department to such an extent that in the mind of the Head of the Department he is endangering his standing, he shall be reported to the Principal.

If he continues his non-attendance, he may be required to drop the subject and repeat it the following year.

If he is reported from several departments on account of non-attendance, he may be suspended from the school for the remainder of the school year.

### Conduct

Students are required to return to the proper place all instruments or apparatus used in experimental work and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents, or irregularities of any kind must be reported immediately to the head of the department, or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentlemanly conduct or general insubordination, are considered good and sufficient reasons for the immediate suspension of a student, and a report to the Trustees for such action as they deem necessary to take.

It is the aim of the Trustees so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the Trustees as a most serious offense and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Any student who violates these provisions will be immediately suspended by the Principal and the case reported at the following meeting of the Trustees for action.

Young men abounding in vitality when suddenly cut loose from home and established social environment to acquire an education at a residential school, need especially the careful direction of more mature minds in the formation of new associations. The management of all residential schools are aware that this fact is the cause of considerable anxiety on the part of parents and guardians. The responsibility thus placed upon those under whose care these pupils are committed is profoundly recognized.

The public schools are for boys and girls, the college for youth, the higher technical and profession schools of medicine, law, engineering, etc., are for men. It is now fully recognized that the fundamental idea of the general educational system, from the kindergarten to the college inclusive, should be the development and establishment of character, and it is therefore expected that those entering the technical schools will have made some progress in self-respect, self-denial and self-control. They enter substantially upon their life work when they matriculate at the higher technical schools and may be placed on their honor as to conduct and not be subject to an irritating and humiliating system of espionage outside of school hours.

In place of such espionage it is the policy of technical schools to rely mainly upon the discipline of the work of the course in connection with facilities for physical exercise in the various athletic games and sports, for which ample provision has been made at this school.

Pupils often err in conduct from thoughtlessness and lack of experience rather than through wilfulness, and unconsciously fall into bad habits because of the lack of intelligent warning and instruction. For this reason, it is proposed to give thorough instruction by lectures, covering the subjects of hygiene, the preservation of physical vigor, morals, thrift and the duties of citizenship. A careful scrutiny will also be maintained by the instructing staff in order to detect in the students any tendency of relaxation in the work or attendance, and all reasonable efforts will be made to maintain a high standard of scholarship and morals.

### **Library**

The school library is supplied with leading textile books and with works dealing with science, art or industries allied to the textile trades. The leading textile papers are kept on file.

### **Sessions**

The regular school sessions are in general from 9.00 a. m. to 1.00 p. m., and from 2 to 4.30 p. m., except Wednesdays and Saturdays when there is no session of the school in the afternoon. On Saturday afternoons the buildings are closed.

A tabular view designates the hours at which the various classes meet. This is rigidly adhered to and the student is marked for this attendance and work as therein scheduled.

### **Residence and Expenses**

Students from a distance, requiring rooms and board in the city, may if they desire, select the same from a list which is kept at the School. The cost of rooms and board in a good district is from \$7.00 per week upwards.

All raw stock and yarn provided by the School, and all the productions of the School remain, or become, the property of the Trustees, except by special arrangement, but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the Trustees may retain in the school such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. Special keyless padlocks are provided and the student is required to make a deposit of 75 cents. At the end of the year 50 cents will be returned if the locker and lock are surrendered in good condition.



No books, instruments, or other property of the school are loaned to the students to be removed from the premises except by special permission.

### **Awards**

Gold Medal, Paris Exposition, 1900, for general excellence. A special Medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American Medal awarded to the School, 1901. Gold Medal, Louisiana Purchase Exposition, 1904, Gold Medal, Lewis and Clarke Centennial Exposition, 1905. Medal of Honor from Panama-Pacific International Exposition, 1915.

### **Bulletins and Catalogues**

All students registering and paying the regular fee for the course selected are entitled to the Bulletins and Catalogues when issued.



## Courses of Instruction

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Since its establishment, the Lowell Textile School has offered courses, each of which extends over a three year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work a better preparation must be demanded of the applicant for entrance.

Nevertheless it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position to devote four years to scholastic preparation, and for these the regular three year courses are offered.

These courses are designated as:—

Cotton Manufacturing.

Wool Manufacturing.

Textile Design (General Textile Courses)

At the completion of any one of these the regular diploma of the school is awarded.

In general it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

The four year courses are:—Textile Engineering, Chemistry and Textile Coloring. At the completion of these courses the degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Chemistry (B. T. C.) are conferred.

Three options are offered in the Engineering Course, viz: General Textile, Cotton Manufacturing, or Wool Manufacturing. Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of Textile Chemistry and Textile Engineering. It is maintained that for one to be successful in either of these important branches of industry, a training is required as thorough and broad as that of any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by over stimulation of the technical development.

### COURSES FOR WOMEN

Although all classes are open to women the courses which have appealed especially to their tastes have been Textile Designing and Decorative Art. Some have pursued courses in Chemistry and have added to their work in Design some instruction in Power Weaving and Finishing. These special courses have in general been followed for three years and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

As the school work is made special to meet the needs of each case, no prescribed course of study is given in this catalogue. Inquiries should be made of the Principal.

## Courses

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 107.

The departments are indicated as follows:

Textile Engineering	B	Cotton Yarns	F
Chemistry and Dyeing	C	Woolen and Worsted Yarns	G
Textile Design and Power		Finishing	H
Weaving	D	Physical Culture	I
Languages and History	E		

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

### FIRST YEAR

#### FIRST TERM

*(Common to all courses)*

	Hours of Exercise
Mechanism B-3	60
Mechanical Drawing B-7	75
Mathematics B-1	45
Textile Design D-1	75
Elementary Chemistry C-1	150
English E-1	30
Elementary German E-2 or Elementary French E-4	30
Physical Culture I-1	30

#### SECOND TERM

	Course VI-4	Course IV-4
Mechanism B-3	45	45
Mechanical Drawing B-8—B-9	90	30
Mechanical Laboratory B-6	37	—
Mathematics B-1	45	30
Textile Design D-1	60	30
Elementary Chemistry C-1	75	75
Cotton Yarn F-1 or Wool Yarn G-1	60	—
English E-1	30	30
Elementary German E-2 or Elementary French E-4	38	30
Physical Culture I-1	30	30
Qualitative Analysis C-2	—	180
Stoichiometry C-3	—	30

For second term subjects in courses I, II and III see pages 95, 97, 99.

### COURSE I-3.—COTTON MANUFACTURING

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The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloth or allied industries and who wish to devote but three years to the school work.

During the first term, the studies are common to all courses and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry and hand loom weaving assists in illustrating the principles of textile design. At the commencement of the second term instruction in the preliminary processes of yarn manufacturing is given.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry followed by instruction in textile chemistry and dyeing, including a short course in the dyeing laboratory.

The work in mechanism serves as a basis for all future machine and mechanical work and is followed by steam engineering, electricity, and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in drafting.

The course in textile designing, cloth analysis, and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. There is also a course on the finishing of cotton fabrics which is given by lectures and laboratory work.

For detailed description of the subjects see page 107.

## COURSE 1-3.—COTTON MANUFACTURING

(For First Term see page 93)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 90	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 105	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 225	Machine Drawing	B-10 30
Textile Design	D-2 60	Steam Engineering	B-12 30
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing Lectures	C-9 45	Physics	B-11 45
		Industrial History	E-6 15

#### SECOND TERM

Cotton Yarn Manufacture	F-1 180	Steam Engineering	B-12 15
Textile Design	D-2 60	Machine Drawing	B-10 30
Power Weaving	D-9 67	Strength of Materials	B-17 30
Textile Chemistry and Dye- ing Laboratory	C-11 68	Physics	B-11 45
		Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 165	Power Weaving	D-10 158
Knitting	F-2 30	Cotton Finishing	H-2 67
Textile Design, Cloth Con- struction	D-6, 7 30	Electricity	B-20 30
		Mill Engineering	B-21 30

#### SECOND TERM

Cotton Manufacture	F-1 225	Mill Engineering	B-21 45
Knitting	F-2 38	Power Weaving	D-10 90
Textile Design, Cloth Con- struction	D-6, 7 45	Cotton Finishing	H-2 67
		Thesis	



### COURSE II-3.—WOOL MANUFACTURING

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The course of Wool Manufacturing is arranged for those who contemplate a career in the manufacture of woolen or worsted fabrics and can devote but three years to the school work. It includes instruction on all of the varied processes employed in adapting the wool fibre to cloth, namely,—sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student commences work in the Woolen and Worsted Laboratory, and through systematic steps becomes acquainted with the machines employed in the first steps of yarn manufacturing. At the same time lectures are given upon the many kinds of wool, variation in quality, grades, uses, etc., as influenced by the locality where grown. This is followed by practical work on the sorting table.

The second and third years cover spinning of woolen yarn and worsted yarn by the Bradford and French systems, also the manufacture of tops, including combing, gilling and back washing. Scouring and carbonizing are taken up in detail by lectures and by practical work.

The general chemistry of the first year is followed by textile chemistry and dyeing in the second year. This includes a short course in the Dyeing Laboratory.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woolen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years and includes mechanical drawing, properties of saturated steam and electricity. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill design and construction are considered. A short course covering methods employed in the testing of fibres, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 107.

## COURSE II-3.—WOOL MANUFACTURING

(For First Term see page 93)

### FIRST YEAR

#### SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 90	Physical Culture	I-1 30
Wool Yarn Manufacture	G-1 105	English	E-1 30

### SECOND YEAR

#### FIRST TERM

Woolen and Worsted Yarn Manufacture	G-1 225	Machine Drawing	B-10 30
Textile Design	D-3 60	Steam Engineering	B-12 30
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing Lectures	C-9 45	Physics	B-11 45
		Industrial History	E-6 15

#### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 180	Steam Engineering	B-12 15
Textile Design	D-3 60	Machine Drawing	B-10 30
Power Weaving	D-9 67	Strength of Materials	B-17 30
Textile Chemistry and Dye- ing Laboratory	C-11 68	Physics	B-11 45
		Industrial History	E-6 15

### THIRD YEAR

#### FIRST TERM

Woolen and Worsted Yarn Manufacture	G-1 128	Power Weaving	D-10 187
Knitting	F-2 30	Woolen and Worsted Finishing	H-1 75
Textile Design, Cloth Con- struction	D-6, 7 30	Electricity	B-20 30
		Mill Engineering	B-21 30

#### SECOND TERM

Woolen and Worsted Yarn Manufacture	G-1 195	Mill Engineering	B-21 45
Knitting	F-2 38	Power Weaving	D-10 90
Textile Design, Cloth Con- struction	D-6, 7 67	Woolen and Worsted Finishing	H-1 75
		Thesis	

### COURSE III-3.—TEXTILE DESIGN (General Textile Course)

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The general course in Textile Design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn and of woollen and worsted yarns from the fleece through the varied processes of manufacturing woollen yarn or worsted yarn by both the French and Bradford systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz.—trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving which serves not only to acquaint the student with the many kinds of cotton, woollen, worsted, and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative Art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year. The instruction includes a short course in the dyeing laboratory.

Power weaving commences with the second year and continues throughout the course and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woollen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 107.

# **COURSE III-3.—TEXTILE DESIGN** **(General Textile Course)**

*(For First Term see page 93)*

## **FIRST YEAR**

### **SECOND TERM**

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 75	Elementary German or	E-2 } 30
Mathematics	B-1 30	Elementary French	E-4 }
Textile Design	D-1 135	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 60	English	E-1 30

## **SECOND YEAR**

### **FIRST TERM**

Textile Design, Decorative Art, Hand Loom Weav- ing	D-2, 3, 4, 5 135	Machine Drawing	B-10 30
Cotton Yarn Manufacture	F-1 113	Steam Engineering	B-12 30
Power Weaving	D-9 67	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing Lectures	C-9 45	Physics	B-11 45
		Industrial History	E-6 15

### **SECOND TERM**

Textile Design, Decorative Art, Hand Loom Weav- ing	D-2, 3, 4, 5 173	Textile Chemistry and Dye- ing Laboratory	C-11 52
Wool Yarn Manufacture	G-1 105	Steam Engineering	B-12 15
Power Weaving	D-9 75	Strength of Materials	B-17 30
		Physics	B-11 45
		Industrial History	E-6 15

## **THIRD YEAR**

### **FIRST TERM**

Textile Design, Cloth Con- struction, Decorative Art	D-6, 7, 8 135	Power Weaving	D-10 98
Woolen and Worsted Yarn Manufacture	G-1 112	Woolen and Worsted Finishing	H-1 75
Mill Engineering	B-21 30	Cotton Finishing	H-2 30
		Electricity	B-20 30

### **SECOND TERM**

Textile Design, Cloth Con- struction, Decorative Art	D-6, 7, 8 150	Power Weaving	D-10 158
Woolen and Worsted Yarn Manufacture	G-1 67	Woolen and Worsted Finishing	H-1 75
Mill Engineering	B-21 45	Cotton Finishing	H-2 67
		Thesis	



## COURSE IV.4.—CHEMISTRY AND TEXTILE COLORING

The Four Year Course in Chemistry and Textile Coloring leading to the degree of B. T. D. is especially intended for those who wish to engage in any branch of Textile Chemistry, Textile Coloring, Bleaching, Finishing, or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring, and finishing are taught by lecture work supplemented with a large amount of experimental laboratory work and actual practice in the dye-house and finishing room.

The underlying theories and principles of chemistry are the same no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the Textile Colorist must consider the complex composition of the textile fibres, and the obscure reactions which take place between them and the other materials of the textile industry.

During the first year General Chemistry including both Inorganic and Organic is taught by lectures and laboratory work, and this is supplemented during the second term by Qualitative Analysis and Stoichiometry.

Advanced Inorganic Chemistry as well as Advanced Organic Chemistry are studied during the second and third year as a continuation of the Elementary Chemistry of the first year, and much time is spent upon Quantitative Analysis, Industrial Chemistry, and Textile Chemistry and Dyeing.

The foundation work in General Chemistry is continued during the third year with courses in Physical Chemistry, Organic laboratory work, and analytical work. The subject of Industrial Chemistry is introduced and much time is devoted to Advanced Textile Chemistry, Dye Testing, Color Matching, Calico Printing, and Woolen, Worsted, and Cotton Finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of Engineering Chemistry is introduced and the work in the Dyeing and Analytical laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in Microscopy, Photomicrography and the use of the various instruments such as the Spectroscope, Ultra-microscope, Polariscope, Tintometer, etc., which often prove of vital importance in the advanced study of Textile Chemistry. During this fourth year, the student devotes much time in the Organic Laboratory in the manufacture of dyestuffs. This is followed by some research work, or original investigation as time will permit. Upon this he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 107.



# COURSE IV.4.—CHEMISTRY AND TEXTILE COLORING

(For First Year see page 93)

## SECOND YEAR

### FIRST TERM

	Hours of Exercise		Hours of Exercise
Advanced Inorganic Chemistry	C-4 45	Stoichiometry	C-3 15
Textile Chemistry and Dyeing Lecture	C-9 45	Quantitative Laboratory	C-7 180
Textile Chemistry and Dyeing Laboratory	C-10 68	Steam Engineering	B-12 30
Quantitative Analysis Lect.	C-7 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30
		Power Weaving	D-9 22

### SECOND TERM

Advanced Inorganic Chemistry	C-4 30	Quantitative Lab. Lect.	C-7 15
Textile Chemistry and Dyeing Lecture	G-9 15	Quantitative Laboratory	C-7 127
Textile Chemistry and Dyeing Laboratory	C-10 188	Advanced Organic Chemistry	C-5 30
Stoichiometry	C-3 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30

## THIRD YEAR

### FIRST TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Quantitative Analysis Lab.	C-7 128
Advanced Textile Chemistry and Dyeing Lab.	C-14 180	Advanced Organic Chemistry Lecture	C-5 45
Industrial Chemistry	C-13 30	Technical German	C-21 30
Quantitative Analysis Lect.	C-7 15	Woolen and Worsted Finishing	H-1 67

### SECOND TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemistry and Dyeing Lab.	C-14 90	Technical German	C-21 30
Industrial Chemistry	C-12 30	Organic Laboratory	C-15 120
Woolen and Worsted Finishing	H-1 67	Quantitative Analysis Lect.	C-7 15
		Quantitative Analysis Lab.	C-7 113

## FOURTH YEAR

### FIRST TERM

Physical Chemistry	C-8 15	Economics	E-7 30
Technical German	C-21 15	Quantitative Analysis and Industrial Analysis	C-17 98
Engineering Chemistry	C-16 15	Dyeing Laboratory	C-14 60
Advanced Textile Chemistry and Dyeing	C-14 30	Organic Laboratory	C-15 120
Advanced Organic Chemistry Dyestuffs	C-20 15	Industrial Laboratory	C-12 30
		Thesis	C-22 82

### SECOND TERM

Organic Laboratory	C-15 120	Advanced Dyeing Conference	C-19 15
Microscopy	C-18 37	Economics	E-7 30
Thesis	C-22 150	Technical German	C-21 15
Dyeing Laboratory	C-14 128	Quantitative Analysis Lect.	C-7 15

## COURSE VI-4.—TEXTILE ENGINEERING

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This course of four years training leading to the degree of Bachelor of Textile Engineering (B. T. E.), aims to meet, in the broadest possible manner, the increasing demands of the textile industry for men with adequate and specialized preparation. The magnitude and scope of the textile and allied industries fully justify the most thorough technical training possible for all who aspire to leadership in this field. Much of the future development of the textile industry will depend upon an intensive application of science to its needs and the possibilities are unlimited. The results of such application of scientific effort in other industries have been noteworthy and modern progress calls for similar action in all. The demand is already strong for broadly trained engineers who have a full appreciation of the details and problems of the processes of textile manufacturing.

The student is first thoroughly grounded in the fundamental principles of mathematics and science underlying all engineering and industrial work. In such preliminary subjects as mechanics, drawing, physics and mathematics, the practical uses of same are considered of first importance.

Much emphasis is laid on the study of power generation and transmission and courses with laboratory practice are given in steam and electrical engineering to familiarize the student with modern practice in these branches.

Systematic instruction in the most approved methods of machine shop practice is given in a shop fully equipped with modern tools and this feature of the course is considered a most valuable adjunct to the training of a textile engineer.

Thorough instruction in all of the various branches of textile manufacturing is provided for students pursuing this course. Among the subdivisions of these branches are textile designing, power weaving, cotton spinning, woolen and worsted spinning, dyeing, cotton and woolen finishing and textile testing.

The work in mill engineering covers a wide range of subjects including mill construction, mill fire protection, mill heating, lighting and humidifying and power transmission. The arrangement of machinery and plants for most efficient production and economical power distribution is also taken up in detail.

During the fourth year considerable time is given to questions of business administration, including the principles and application of scientific management and efficiency engineering, mill cost accounting and business law.

For detailed description of subjects see page 107.

## COURSE VI-4.—TEXTILE ENGINEERING

### General Course

(For First Year see page 93)

### SECOND YEAR

#### FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing Lectures	C-9 45	Graphic Statics	B-4 30
Physics	B-11 45	Engineering Laboratory	B-14 37
Mathematics	B-2 45	Weaving Mechanism	B-5 30
Machine Drawing	B-10 60	Shop Work	B-15 60
Steam Engineering	B-12 30	Cotton Yarn Manufacture	F-1 60
Power Weaving	D-9 45	Advanced German	E-3-5 30
		Industrial History	E-6 15

#### SECOND TERM

Physics	B-11 45	Shop Work	B-15 60
Mathematics	B-2 45	Wool Yarn Manufacture	G-1 105
Strength of Materials	B-4 30	Advanced German	E-3-5 30
Machine Drawing	B-10 75	Industrial History	E-6 15
Steam Engineering	B-14 67	Power Weaving	D-9 45

### THIRD YEAR

#### FIRST TERM

Electrical Engineering	B-19 68	Power Weaving	D-9 60
Machine Shop Practice	B-15 60	Mathematics	B-2 30
Engineering Laboratory	B-14 37	Mill Engineering	B-21 60
Woolen and Worsted Yarn Manufacture	G-1 97	Woolen and Worsted Finishing	H-1 68
Strength of Materials	B-17 30		

#### SECOND TERM

Hydraulics	B-13 15	Woolen and Worsted Yarn Manufacture	G-1 68
Electrical Engineering	B-19 105	Woolen and Worsted Finishing	H-1 30
Mill Engineering	B-21 75	Power Weaving	D-9 37
Machine Shop Practice	B-15 60	Strength of Materials	B-17 30
Engineering Laboratory	B-14 30		
Mathematics	B-2 45		
Power Plants	B-18 15		

### FOURTH YEAR

#### FIRST TERM

Cotton Yarn Manufacture	F-1 30	Power Plants	B-18 15
Mill Engineering	B-21 60	Woolen and Worsted Yarn Manufacture	G-1 68
Electrical Engineering	B-19 82	Business Administration	E-8 90
Cotton Finishing	H-2 15	Thesis	75
Economics	E-7 30		

#### SECOND TERM

Cotton Yarn Manufacture	F-1 30	Business Administration	E-8 90
Mill Engineering	B-21 82	Thesis	38
Electrical Engineering	B-19 83	Textile Testing	G-2 20
Cotton Finishing	H-2 67	Woolen and Worsted Yarn Manufacture	G-1 40
Economics	E-7 30		

# COURSE VI-4.—TEXTILE ENGINEERING

## Cotton Option

(For First Year see page 93)

### SECOND YEAR

	FIRST TERM			Hours of Exercise	
Textile Chemistry and Dye- ing Lectures	C-9	45	Graphic Statics	B-4	30
Physics	B-11	45	Weaving Mechanism	B-5	30
Mathematics	B-2	45	Shop Work	B-15	60
Machine Drawing	B-8	30	Cotton Yarn Manufacture	F-1	60
Engineering Laboratory	B-14	37	Cotton Design	D-2	30
Steam Engineering	B-12	30	Advanced German	E-3, 5	30
			Industrial History	E-6	15
			Power Weaving	D-9	38

### SECOND TERM

Physics	B-11	45	Cotton Yarn Manufacture	F-1	105
Mathematics	B-2	45	Cotton Design	D-2	37
Strength of Materials	B-4	30	Power Weaving	D-9	45
Machine Drawing	B-8	37	Advanced German	E-3, 5	30
Steam Engineering	B-12	67	Industrial History	E-6	15
Shop Work	B-15	60			

### THIRD YEAR

	FIRST TERM			Hours of Exercise	
Electrical Engineering	B-19	68	Power Weaving	D-9	60
Machine Shop Practice	B-15	60	Engineering Laboratory	B-14	38
Mill Engineering	B-21	60	Mathematics	B-2	30
Cotton Yarn Manufacture	F-1	97	Strength of Materials	B-17	30
Cotton Design	D-6, 7	67			

### SECOND TERM

Hydraulics	B-13	15	Cotton Design	D-6, 7	30
Electrical Engineering	G-19	105	Power Weaving	D-9	37
Machine Shop Practice	B-15	60	Engineering Laboratory	B-14	30
Mill Engineering	B-21	90	Mathematics	B-2	45
Cotton Yarn Manufacture	F-1	68	Strength of Materials	B-17	30

### FOURTH YEAR

	FIRST TERM			Hours of Exercise	
Mill Engineering	B-21	60	Cotton Finishing	H-2	15
Electrical Engineering	B-19	67	Power Weaving	D-10	30
Cotton Yarn Manufacture	F-1	98	Business Administration	E-8	90
Power Plants	B-18	15	Economics	E-7	30
Cotton Design	D-6, 7	45	Thesis		60
	SECOND TERM			Hours of Exercise	
Cotton Yarn Manufacture	F-1	60	Textile Testing	G-2	30
Mill Engineering	B-21	82	Cotton Finishing	H-2	67
Electrical Engineering	B-19	83	Business Administration	E-8	90
Economics	E-7	30	Thesis		68



# COURSE VI-4.—TEXTILE ENGINEERING

## Wool Option

(For First Year see page 93)

### SECOND YEAR

		FIRST TERM			
		Hours of Exercise			Hours of Exercise
Textile Chemistry and Dyeing Lectures	C-9	45	Shop Work	B-15	60
Physics	B-11	45	Woolen and Worsted Yarn Manufacture	G-1	60
Mathematics	B-2	45	Woolen and Worsted Design	D-3	30
Machine Drawing	B-8	30	Advanced German	E-3, 5	30
Engineering Laboratory	B-14	37	Industrial History	E-6	15
Steam Engineering	B-12	30	Power Weaving	D-9	38
Graphic Statics	B-4	30			
Weaving Mechanism	B-5	30			

### SECOND TERM

Physics	B-11	45	Woolen and Worsted Yarn Manufacture	G-1	105
Mathematics	B-2	45	Woolen and Worsted Design	D-3	37
Strength of Materials	B-4	30	Power Weaving	D-9	45
Machine Drawing	B-8	37	Advanced German	E-3, 5	30
Steam Engineering	B-12	67	Industrial History	E-6	15
Shop Work	B-15	60			

### THIRD YEAR

		FIRST TERM			
Electrical Engineering	B-19	68	Woolen and Worsted Finishing	H-1	67
Machine Shop Practice	B-15	60	Power Weaving	D-9	60
Mathematics	B-2	30	Engineering Laboratory	B-14	38
Mill Engineering	B-21	60	Strength of Materials	B-17	30
Woolen and Worsted Yarn Manufacture	G-1	97			

### SECOND TERM

Hydraulics	B-13	15	Woolen and Worsted Yarn Manufacture	G-1	68
Electrical Engineering	B-19	105	Woolen and Worsted Finishing	H-1	30
Mill Engineering	B-21	90	Power Weaving	D-9	37
Machine Shop Practice	B-15	60	Strength of Materials	B-17	30
Engineering Laboratory	B-14	30			
Mathematics	B-2	45			

### FOURTH YEAR

		FIRST TERM			
Mill Engineering	B-21	60	Power Weaving	D-10	30
Electrical Engineering	B-19	67	Business Administration	E-8	90
Worsted Yarn Manufacture	G-1	113	Power Plants	B-18	15
Woolen and Worsted Design	D-6, 7	45	Economics	E-7	30
			Thesis		60
		SECOND TERM			
Mill Engineering	B-21	60	Business Administration	E-8	97
Electrical Engineering	B-19	67	Textile Testing	G-2	45
Worsted Yarn Manufacture	G-1	98	Thesis		68
Woolen and Worsted Design	D-6, 7	67			



## ENTRANCE REQUIREMENTS

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The requirements for admission to this school are given in detail on page 75.

### DIPLOMA COURSES—REQUIRED SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra (A1, A2)
- A-3 Elementary German A  
or
- A-4 Elementary French B
- A-5 English
- A-6 History
- A-7 Arithmetic

### DEGREE COURSES—ELECTIVE SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra
- A-3 Elementary German A  
or
- A-4 Elementary French A
- A-5 English
- A-6 History

### DEGREE COURSES—REQUIRED SUBJECTS

- A-8 Physics
- A-9 Chemistry
- A-10 Solid Geometry
- A-11 Trigonometry
- A-12 Mechanical Drawing
- A-13 Mechanic Arts
- A-14 History
- A-15 Advanced German  
or
- A-16 Advanced French
- A-17 English

## **Subjects of Instruction**

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### **TEXTILE ENGINEERING DEPARTMENT—B**

#### **Mathematics**

**(Algebra, Trigonometry, Elements of Analytical Geometry)—B-1**

PREPARATION: A-I, A-2

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of Higher Algebra and Trigonometry, in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, text-book, class and problem work, and consists essentially of the following: Progressions, Graphical Representation, Permutations and Combinations, Logarithms, Slide Rule, Trigonometry, Binomial Theorem, Partial and Continued Fractions, Series, Theory of Equations, Significant Figures, and Plotting of Scientific Data, Straight Line Equations, Point of Division of a Line, Equation of Parallel and Perpendicular Lines.

[ALL COURSES]

#### **Mathematics**

**(Analytical Geometry, Differential Calculus, Elements of  
Integral Calculus)—B-2**

PREPARATION: B-I

This course is a continuation of the work of the first year, and treats of the following subjects: Formulae of Differentiation, Conic Sections, Transformation of Co-ordinates, Maxima and Minima, Direction of Curves, Center and Radius of Curvature, Problems on Differential Calculus, Elements of Integral Calculus, Integration as a Summation, and Plane Areas. The above are treated in both Rectangular and Polar Co-ordinates. Formulae of Integration, Integration by parts, Integration by Substitution, Successive Integration, Evaluation of Integrals, Center of Gravity, Center of Pressure, Total Pressure, Moment of Inertia.

[COURSE VI-4]

### Mechanics and Mechanism—B-3

PREPARATION: A-1, A-2, B-1. TAKEN SIMULTANEOUSLY WITH B-1

These subjects are a necessary preparation for all courses and are taken in one hundred and five hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance and the application and problems are selected with special reference to their practical uses in textile machinery. The large variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subjects treated in this course are:

#### MECHANICS

Work, power and energy.  
Principle of moments.  
Simple and compound levers.  
Differential and common pulleys.  
Jack screw and worm and wheel.  
Parallelogram and triangle of forces.  
Inclined plane and wedge.

#### MECHANISM

Linear and angular velocity.  
Belting calculations.  
Gears and gear trains.  
Cam and cone pulley design.  
Linkage problems.  
Differential and epicyclic trains.  
Intermittent motions.

[ALL COURSES]

### Graphic Statics—B-4

PREPARATION: B-1 AND B-3

The work in this course is presented by lecture and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered.

[COURSE VI-4]

### Weaving Mechanism—B-5

PREPARATION: B-1, B-3. TAKEN SIMULTANEOUSLY WITH D-9

This course consists of thirty lectures given during the first term of the second year and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[COURSES VI-4, I-3, II-3 AND III-3]

### **Mechanical Laboratory—B-6**

PREPARATION: B-3. TAKEN SIMULTANEOUSLY WITH B-4

This work is given during the second term of the first year and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows:

Determination of coefficient of friction.

Proof of principle of moments.

Proof of principle of work.

Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jack screws, wedges, etc.

Experimental proofs of the principles of graphic statics.

Efficiency tests on belt transmission including measurement of belt tensions, co-efficient of friction, slip, etc.

Tests on various types of absorption dynamometers.

Calibration of transmission dynamometer.

Power measurements on textile machinery with differential dynamometer.

Measurement of friction of steam engine.

[COURSE VI-4]

### **Mechanical Drawing—B-7**

PREPARATION: A-I. TAKEN SIMULTANEOUSLY WITH B-3

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions:

Care and use of drawing instruments.

Geometrical constructions.

Elements of projections and descriptive geometry.

Isometric projection.

Developments with practical applications.

Sketching practice on machine details.

[ALL COURSES]

### **Machine Drawing—B-8**

PREPARATION: B-7

This work is the continuation of the mechanical drawing and is pursued throughout the second term of first year. This work is wholly of a practical character and includes sketching from the textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[COURSES I-3, II-3, III-3, VI-4]

### **Machine Drawing—B-9**

PREPARATION: B-7

For students electing IV-4 in the second term of the first year a course of machine drawing is given similar to B-8 except that it is not as extensive and is concluded in thirty hours.

### **Machine Drawing—B-10**

PREPARATION: B-3, B-7, B-8

During the second year the work in Machine Drawing is devoted to advanced graphical mechanism problems. The data for all of these problems is in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame cone design, mule quadrant motion, analysis of camless winder and a number of others of similar character.

[COURSES I-3, II-3, III-3, VI-4]

### **Physics—B-11**

PREPARATION: B-I

This course is given during the second year and serves especially as a preparation for Steam Engineering, Hydraulics, Electricity and Optics. The subject is presented by means of lectures, recitations, problems, and reference books. The lectures deal chiefly with the application of the various physical laws and principles with the view of their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: Gravitation, Moving Bodies, Mechanics, Elasticity, Hydrostatics, Elements of Hydraulics, Properties of Fluids and Gases, and the Theory of Sound. These subjects are followed by a series of lectures on heat phenomena dealing with the Generation of Heat, Thermometry, Calorimetry, Transfer of Heat, its Effect on Solids, Liquids, and Gases, and problems such as lead to the Elements of Steam Engineering.

The latter part of the course is devoted to the discussion of the laws governing the Nature, Propagation and Transmission of Light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young Helmholtz Theory of Color Sensation. During the last part of the course the principles of Electricity and Magnetism are taken up in detail.

[ALL COURSES]



## **Steam Engineering—B-12**

PREPARATION: B-II

The purpose of this work is to familiarize the student with the essentials of power generation and the means and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines, and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work, and also engine and boiler testing.

[ALL COURSES]

## **Hydraulics—B-13**

PREPARATION: B-3, B-II

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[COURSES I-3, II-3, VI-4]

## **Engineering Laboratory—B-14**

PREPARATION: B-I2

The principles underlying the subjects of Steam Engineering, Hydraulics and Thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests:

Calibration of gages, thermometers, indicators, anemometers, tachometers, and other measuring instruments.

Experiments on flow of steam.

Calorimeter tests.

Radiation tests and pipe covering tests.

Injector and ejector tests.

Engine tests. Condensing and non-condensing.

Steam pump tests.

Surface condenser tests.

Valve setting.

Boiler testing.

Tests on heating and ventilating fans, both motor and engine driven.  
Pump tests. Triplex and centrifugal.  
Air compressor tests.  
Flue gas analysis.  
Steam turbine tests. Condensing, non-condensing and low pressure.  
Complete steam plant testing.  
Gas engine testing.

[COURSE VI-4]

### **Machine Shop Practice—B-15**

PREPARATION: B-3

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools and the characteristics of the different materials worked. Particular attention is given to the form, setting, grinding, and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine shop practice on textile machinery. The list of tools which appears under Equipment in this bulletin gives an idea of the scope of the work which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of wood working tools, both hand and machine and in forging.

[COURSE VI-4]

### **Strength of Materials—B-17**

PREPARATION: B-I AND B-3

This is a short course consisting of thirty lectures given in the second year in which the elements of the subject are set forth. The main topics which are discussed are stress and strain, testing of materials, bending moments and shearing forces, beam design, column design, torsion, compound beams and columns, combined stresses. The course is largely preparatory for the third year work in Mill Engineering, and is followed in the third year of the degree course in Textile Engineering by further and more advanced work along similar lines.

[COURSES VI-4, I-3, II-3, III-3]

### **Power Plants—B-18**

PREPARATION: B-12

This course, which consists of lectures given during the third and fourth year, takes up the fundamental consideration involved in the

planning of a power plant for a textile mill. A standard text book is used in connection with the lectures and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[COURSE VI-4]

### **Electrical Engineering—B-19**

PREPARATION: B-II

The elementary principles of Electricity and Magnetism are considered in the lecture course of Physics. Their development and application are taken up in this course in a detailed study of the means used to generate, transmit, and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of Direct and Alternating Current Generators, Motors, Instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[COURSE VI-4]

### **Efficiency Engineering—B-20**

In recognition of the great advances which have been recently made towards better methods of management and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the student to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of the work of the various departments, especially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use and the relations of psychology to efficient management is also considered. Finally, visits to shops where modern methods of management have been installed enables the student to see the practical working out of the ideas developed in the lectures.

#### *Accounting*

The purpose of the course in accounting is two fold. In the first place it aims to acquaint the student with the modern methods of handling

the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such as, for instance, the use of checks, drafts and notes, bank discounts, etc. In the second place it gives him an intelligent comprehension of the requirements and the design of a proper cost accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lectures and practice work. It is coupled with instruction on the compilation of Balance Sheets in proper form, together with Profit and Loss statements and supporting schedules. Thus a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures and elaborated by actual practice.

Cost Accounting forms an important part of this subject and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

During the summer preceding this work of the fourth year, the student is required to work up a simple bookkeeping set, thus saving valuable time during the school year and effectively preparing the ground for the instruction work.

#### *Business Law*

Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing Contracts, Negotiable Instruments, Sales, Bills of Lading, Real Estate and Corporation.

#### *Patent Law*

During the fourth year a course of six lectures is given by a practicing Patent Attorney of Lowell. This course takes up the elements of patent law and is intended to give the student a guiding knowledge of the subject.

### **Mill Engineering—B-21**

PREPARATION: B-3, B-4, B-10, B-17

This work covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A detailed study is made of the most modern types of mill buildings including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.



The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions from mills already built, or in process of construction. The question of mill heating, ventilation, lighting, humidification and fire protection are also studied and the time spent in the drawing-room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[COURSE VI-4]

### CHEMISTRY AND DYEING DEPARTMENT—C

#### Elementary Chemistry (Inorganic and Organic Chemistry)—C-1)

Instruction in Elementary Chemistry extends through the first year and includes lectures, recitations, and a large amount of individual laboratory work upon the following subjects:

##### *Chemical Philosophy*

Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

##### *Non-Metallic Elements*

Study of their occurrence, properties, preparations, chemical compounds, etc.

##### *Metallic Elements*

Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up as thoroughly as the time will permit the qualitative detection of the more common metals and non-metals, with practical work.

##### *The Hydrocarbons and their Derivatives*

Study of their occurrence, properties, preparations and uses. This work although elementary in character is of sufficient breadth to prepare the student understandingly for the work with the artificial dyestuffs which follows.

[ALL COURSES]

#### Qualitative Analysis—C-2

PREPARATION: C-I TAKEN SIMULTANEOUSLY

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations, and laboratory work. The student must become familiar with the separations and the detections of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys, and pigments. At intervals during the term,



short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments, and the various dyeing reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of Quantitative Analysis, such as the precipitation and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.

A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[COURSE IV-4]

### **Stoichiometry—C-3**

PREPARATION: B-I

This subject is taken during the second half of the first year and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied and problems are worked involving the expansion and contraction of gases, determination of empirical formulae, combining volume of gases and quantitative analysis.

[COURSE IV-4]

### **Advanced Inorganic Chemistry—C-4**

PREPARATION: C-I

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first year course in General Chemistry.

[COURSE IV-4]

### **Advanced Organic Chemistry—C-5**

PREPARATION: C-I

In this course which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as the time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the time being devoted to the benzene series. The aim of the course is to lay a broad foundation for the study of the Chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds in order to become familiarized with equation writing.

[COURSE IV-4]

### **Quantitative Analysis—C-6**

PREPARATION: C-2, C-3

During the second year, the principles of analytical work are thoroughly taught, the work being based on Talbot's Quantitative Chemical Analysis. Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include salts, ores, minerals, bleaching powder and alkalies. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[COURSE IV-4]

### **Quantitative Analysis—C-7**

PREPARATION: C-6

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin, and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums, and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[COURSE IV-4]

### **Physical Chemistry—C-8**

PREPARATION: C-4, C-5, B-II

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[COURSE IV-4]

### **Textile Chemistry and Dyeing—C-9**

PREPARATION: C-I, B-3, B-7

The outline of the lecture course which is given during the first term of the second year is as follows:

### *Technology of Vegetable Fibres*

Cotton, Linen, Jute, Hemps, China Grass. Chemical and physical properties, chemical composition, microscopical study, and their action with chemicals, acids, alkalies and heat.

### *Technology of Animal Fibres*

Wool, Mohair, Silk. Chemical and physical properties. chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

### *Technology of Artificial Fibres*

Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

### *Operations Preliminary to Dyeing*

Bleaching of cotton and linen, wool scouring, bleaching, fulling and felting of wool, carbonizing, silk scouring and bleaching, action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in emulsive wool scouring process and their action upon the fibre under various conditions; also the most successful of the solvent methods for degreasing wool.

### *Water and its Application in the Textile Industry*

Impurities present, methods for detection, their effect during the different operations of bleaching, scouring, dyeing and printing, and the methods for their removal or correction.

The important subject of boiler waters is also studied under this heading with a full discussion of the formation of boiler scale, its disastrous results and the methods by which it may be prevented.

### *Mordants and Other Chemical Compounds used in Textile Coloring and Classified as Dyestuffs*

Theory of mordants, their chemical properties and the application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, levelling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under the heading are included the definition of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and levelling agents.

### *Theory of Dyeing*

A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

### *Natural Organic Coloring Matters*

Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used within recent years by textile colorists.

### *Mineral Coloring Matters*

Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

### *Artificial Coloring Matters*

General discussion of their history, nature, source, methods of manufacture, methods of classification, and their application to all fibres.

Special study of:—

Basic Coloring Matters.

Phthalic Anhydride Colors, including the eosins and phloxines.

Acid Dyestuffs.

Janus Colors.

Direct Cotton Colors.

Sulphur Colors.

Mordant Colors, including the alizarines and other artificial coloring matters requiring metallic mordants.

Mordant Acid Colors.

Insoluble Azo Colors, developed on the fibre.

Reduction Vat Colors.

Aniline Black and other artificial dyestuffs not coming under the above heads.



As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

#### *Machinery used in Dyeing*

A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams, and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the School and the students can be taken directly from the lecture room and shown the machines in actual operation.

[ALL COURSES]

### **Dyeing Laboratory—C-10**

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities, in the full sized dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full sized dyeing machines and vats, the practical side of the subject is studied. It is the constant endeavor of those in charge, to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[COURSE IV-4]

### **Dyeing Laboratory—C-11**

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

This course in general laboratory work in Textile Chemistry and Dyeing is given during the second term of the second year. It is so arranged as to acquaint the student with the properties of the fibres, mordants and coloring matters, and their application in the Textile Industry.

[COURSES I-3, II-3, III-3]



## Industrial Chemistry

### Laboratory—C-12

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the second year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully with the view of producing as great and pure a yield of each substance as possible. Industrial Chemistry not only involves the application of the principles of both inorganic and organic chemistry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds) making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process with the object of producing as near the theoretical yield as possible. The student is charged with the amount of raw material at market prices, and the finished product is brought back by the school.

Recently much new apparatus has been added to the industrial chemistry laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[COURSE IV-4]

## Industrial Chemistry

### Lecture—C-13

PREPARATION: C-4, C-5, C-12

During the whole of the third year, lectures and recitations are held in Industrial Chemistry the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and coal tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powder, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[COURSE IV-4]

## Advanced Textile Chemistry and Dyeing—C-14

### PREPARATION: C-9, C-10

This is a continuation of the Textile Chemistry and Dyeing of the second year and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and in addition the following subjects:—

#### *Classification and Construction of Artificial Dyestuffs*

A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

#### *Color Matching and Color Combing*

A study of that portion of physics which deals with color, and the many color phenomena of interest to the textile colorist, and lecture work being supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist and the results of combining coloring lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics are discussed under this heading.

Each student's eyes are tested for color blindness early in the course in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color-work and color matching may be performed.

#### *Dye Testing*

This subject includes the testing of several dyestuffs of each class, to all the common color destroying agencies, the determination of their characteristic properties and their action towards the different fibres, also the determination of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card which furnishes a permanent record

of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalies.

### *Union Dyeing*

A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials with the production of solid and two color effects.

### *Textile Printing*

A thorough study of the whole subject of textile printing, each student being required to individually produce no less than twenty different prints including the following styles:—Pigment style, direct printing style, steam style with tannin mordant, steam style with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied, also the precautions which must be considered in its use and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon the manufacturing scale as well as experimentally in the laboratory.

### *Cotton Finishing*

A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, mercerizing, beetling, and filling, and the various machines used for carrying out these processes.

### *Mill Visits*

During the third and fourth years, visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

## **Organic Chemistry Laboratory—C-15**

This course, while including practice in the usual methods of organic analysis and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dyestuffs. The student not only prepares many of the representative dyestuffs, but what is far more important, he carries out all the operations beginning with coal tar itself. Thus, instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar and makes

his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory and an excellent opportunity is presented for original work.

[COURSE IV-4]

### **Engineering Chemistry—C-16**

PREPARATIONS C-4, C-5, C-6

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils, and water from the chemical engineer's standpoint. The elements of Chemical Engineering are also considered to such an extent as time will permit.

[COURSE IV-4]

### **Industrial Analysis—C-17**

PREPARATION: C-6

In conjunction with the lectures in Engineering Chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[COURSE IV-4]

### **Microscopy and Photomicrography—C-18**

The value of the microscope in the detection and examination of the various fibres cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high grade microscopes, and not only have practice in the examination and detection of the fibres, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibres and the various slides which they may prepare. A special dark room has been provided for this purpose.

[COURSE IV-4]

### **Advanced Dyeing Conference—C-19**

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is two fold. First to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others, and secondly of bringing before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[COURSE IV-4]



### **Advanced Organic Chemistry (Dyestuffs)—C-20**

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[COURSE IV-4]

### **Technical German—C-21**

This course consists of the reading of German technical literature with the object of familiarizing the student with the current German publications in Textile Chemistry and Coloring.

[COURSE IV-4]

### **Thesis—C-22**

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[COURSE IV-4]

## **TEXTILE DESIGN AND WEAVING DEPARTMENT—D**

### **Textile Design—D-1**

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves including figured and colored effects; producing chain and draw from design and vice versa; extending and extracting weaves.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3, III-3, VI-4]

### **Decorative Art—D-1**

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term Freehand Drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The Engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing with reference to their application in textiles. Good examples of applied design in textiles as well as in other branches



are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

### **Cloth Analysis—D-1**

In the first year this subject takes up in a systematic manner, the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave, the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are: reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibres; grading of yarns, folded, ply, novelty and fancy yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, weight of yarn required to produce a given fabric.

[FIRST YEAR—ALL COURSES]

### **Hand Loom Weaving—D-1**

During the first year the work in hand loom weaving is taken in connection with design and analysis and consists largely of picking-out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for dobby work.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I-3, II-3, III-3]

### **Textile Design—D-2**

FOR COTTON GOODS—PREPARATION: D-1

The work of the second year follows with consideration of fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same into the loom. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[COURSES I-3, III-3, VI-4]

### **Textile Design—D-3**

FOR WOOLEN AND WORSTED GOODS

PREPARATION: D-1

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling,

double cloths, multiple ply fabrics, cotton warps, blankets, bath-robcs, crepes, filling reversible, Bedford cords, imitation furs, crepons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics together with the consideration of the shrinkages, and dead loss in all fabrics, theory of diameter of yarns, costs of mixer blends, is a part of this course.

[COURSES II-3, III-3, VI-4]

### **Decorative Art—D-4**

PREPARATION: D-1

The work of the second year is similar to that of the previous year, but is more advanced and specific. More original work is required as well as copying and composition work.

[COURSE III-3]

### **Textile Design—D-6**

PREPARATION: D-2 OR D-3

The advanced work takes up the more complicated weaves adapted to harness work and leads into leno and Jacquard designs. The following is a brief list of the subject heads which will give some idea of the course: Double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholstery, spot weaves, pile or plush, crepon, matelasse and its imitation, pique, Marseilles, quilting, miscellaneous designs for Jacquard, leno, fustian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year; that of requiring the student to make original designs and to weave the same.

[COURSES I-3, II-3, III-3, VI-4]

### **Cloth Construction—D-7**

PREPARATION: D-2 OR D-3

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original, the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value, and the discussion of the breaking strength of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject which is given by class room work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[COURSES I-3, II-3, III-3, VI-4]

## **Decorative Art—D-8**

### **PREPARATION: D-4**

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third year course. It should be understood that work in Decorative Art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[COURSE III-3]

## **Decorative Art for Special Students**

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the Historic styles for all materials—wood, gold, silver, copper, brass, leather, fabrics, wall papers, and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

## **Power Weaving—D-9**

### **PREPARATION: D-I. TAKEN SIMULTANEOUSLY WITH B-5**

In connection with the work in Textile Design and Cloth Analysis, practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects:

Loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, centre selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and double life leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the course of weaving mechanism.

[COURSES I-3, II-3, III-3, VI-4]

## **Power Weaving—D-10**

### **PREPARATION: D-9, D-2, OR D-3**

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions,

lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[COURSES I-3, II-3, III-3, VI-4]

## **LANGUAGE AND HISTORY DEPARTMENT—E**

### **English—E-1**

PREPARATION: A-5

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the English course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition, and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[ALL COURSES]

### **Elementary German—E-2**

This course is intended for first year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

### **Advanced German—E-3**

PREPARATION: E-2

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[COURSES IV-4, VI-4]

### **Elementary French—E-4**

This course is intended for first year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in



translation is acquired by a considerable amount of reading from general or scientific sources.

### **Advanced French—E-5**

PREPARATION: E-4

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[COURSES IV-4, VI-4]

### **Industrial History—E-6**

PREPARATION: A-6

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England, and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of today. The course consists of weekly lectures supplemented by text-book reading. Among the topics treated are: natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history in order that he may have practice in research work and also may continue his training in English.

[ALL COURSES]

### **Economics—E-7**

PREPARATION: E-I, E-6

This course consists of lectures supplemented by recitations based upon both the lectures and a text book. The character of the course is descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are: the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest, and profits; business organization; value and price; monopoly; money, credit, and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[COURSES IV-4, VI-4]



## COTTON DEPARTMENT—F

### Cotton Yarn Manufacturing—F-1

#### PREPARATION: B-1, B-3, B-7

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows:

#### *Fibre*

Before taking up the details of the operation of manipulating the fibre into yarn a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fibre. Methods employed in cultivating, marketing, grading, and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

#### *Opening and Picking*

Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as Evener, Lap Measuring and Safety Stop Motion, Grids, Cleaning Trunks, Beaters, etc., also operation details which involve the adjustment of waste, drafts and character of laps.

#### *Carding*

The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the student may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, forms a part of the work. The influence of faulty parts, defective condition and their remedy are included.

#### *Drawing*

Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and evener motions.

#### *Roving Processes*

Under this head is studied the various machines known as the Slubber, Intermediate, Fine and Jack Fly Frames. The relative motion of the various parts of these machines are so complex that a good opportunity is here presented to fix in the student's mind the application of certain mechanical principles that have use in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering and under this head is taken up both the Metric and English systems.

### *Ring Spinning and Twisting*

The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travellers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

### *Mule Spinning*

This method of spinning is very different from that of the ring frame and the mechanical details are more complicated. The student is furnished with new means of producing yarns and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the Drawing, Twisting, Backing Off, Winding, together with special motions and devices as are used upon the modern mule.

### *Combing*

This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whiting and Nasmith Combers.

### *Organization*

Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading is also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

[COURSES I-3, III-3, VI-4]

## **WOOLEN AND WORSTED YARNS—G**

### **Manufacturing—G-1**

PREPARATION: B-1, B-3, B-7

### *Raw Materials*

A study of raw materials which enter into the manufacture of woollens or worsted yarns or are made into yarns by processes similar to those

employed in the manufacture of woolen and worsted yarns, would include Silk, Mohair, Alpaca, Vicuna, Cashmere, Camel's Hair, Cotton, Flax, Hemp, Jute and Ramie. In connection with these are considered Shoddy, Noils, Mungo and Extracts.

### *Wool Sorting*

Familiarity with the various grades and kinds of wool is obtained by lecture and by actual sorting of fleece wool under the direction of an experienced wool sorter. The various characteristics and properties are explained, as are also trade terms such as Picklock XXX, XX,  $\frac{1}{2}$ -Blood,  $\frac{3}{8}$ -Blood,  $\frac{1}{4}$ -Blood, Delaine, Braid, etc. Some skill is acquired in the estimation of shrinkage and in judging the spinning qualities.

### *Wool Scouring*

The object of scouring and the methods employed are explained and this involves the consideration of the soaps and chemicals used in washing, also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap, also tests are made to show this effect. At the same time the use of driers, their operation and regulation is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

### *Burr Picking, Mixing and Oiling*

In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of Mixing and Burr Pickers is made clear.

### *Carding*

The different systems of carding wool, depending upon whether it is to be made into woolen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool and the further manufacture of it into yarn serves to fix the principles of carding in the mind of the student, as well as gives him some skill in handling machinery. At the completion of this part of the work he is required to prepare and hand in a full description of the process of carding including working drawings, sketches, etc., to fully explain the machines and the methods.

### *Woolen Mule*

The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as for example, the Backing Off and Winding Motions, the Quadrant, Builder-rail, Faller Regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

### *Top Making and Combing*

This branch takes up, besides the carding of the wool on a worsted card, the preparing processes, also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures and by dismantling and assembling these machines in the laboratories. Later quantities of stock are made into top and then into yarn.

The Noble and Lister combs are studied and the various calculations to determine draft, noiling, productions, etc., are made.

### *Drawing and Spinning*

The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or Open Drawing System or by the French System. The process includes the various machines in the successive steps of making Bradford spun yarn and the functions of the different machines are studied. In the latter or French System the stock is run through the drawing machines and the roving spun into yarn on the French Mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford System is given work on the twistors and the effects that may be produced.

### *Organization*

At the end of the course the lay-out of a properly balanced yarn mill is studied and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[COURSES II-3, III-3, VI-4]

### **Textile Testing—G-2**

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibres, yarns and fabrics. The application of physical laws and methods of measurements, as studied in the course of Physics, are used in the study of physical characteristics of textile material. The work is given to students in advanced courses and consists of lecture and laboratory work. Reports are prepared from each experiment giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may



acquire practice and understand the interpretation of data. A special testing laboratory has recently been constructed and a considerable number of the best standard fibre, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant so that tests can be made under uniform or standard conditions of humidity and temperature.

## **FINISHING DEPARTMENT—H**

### **Woolen and Worsted Finishing—H-1**

PREPARATION: B-3, C-1, D-1, D-9

The outline of this course which is given by means of lecture and laboratory work is as follows:

#### *Burling and Mending*

Under this head is taken up for consideration the examination of flannel as it comes from the loom, the construction, use, and location of the perch, the methods used in marking defects, measuring, weighing, and numbering of cloths, also the methods of inspection for fancies, single cloths, and double cloths. The object of burling, mending, and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

#### *Fulling*

This branch covers a study of the conditions of the flannel as it comes from the loom, the influence of oil, etc. upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressure of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls, and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali, and acid is considered as well as the hygroscopic and felt-ing properties of different wool fibres. The preparation of the flannel for the mill and the usual methods of determining shrinkages as well as the various methods of soaping are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt as well as the determination of the proper amount of alkali for various goods are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz.: all wool,



shoddies, and mixed goods, is studied in class room and by operation in the mill.

The change in weight and strength for each operation is carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet, are considered in both class and machine rooms. In each operation the defects likely to materialize are studied as well as the cause thereof, and various methods of modifying or lessening them.

### *Washing and Speck Dyeing*

This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions, and sours, on the different kinds of goods is made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters and includes methods of preparation, materials used, application and tests required.

### *Carbonizing*

This is an important branch of finishing and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

### *Gigging, Napping and Steaming*

The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines, is discussed and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining lustre and the production of permanent finish are considered in connection with steaming and sponging.

### *Brushing, Shearing and Pressing*

This includes as do the other branches a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. In manipulation of the shear consideration is given to its setting, grinding, and adjustment. With the brushing machine the effect of steaming and moisture upon the lustre and feel of the goods is shown. A study of the action of the presses, both plate and rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as for example,

measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[COURSES II-3, III-3, VI-4, IV-4]

## **Cotton Finishing—H-2**

PREPARATION: B-3, C-1, D-1, D-9

The outline of the course in the Finishing of Cotton Fabrics is as follows:

### *Cloth Room*

Instruction of the various goods and the object thereof. Construction of the various types of inspecting and trimming machines.

### *Shearing*

The object. A consideration of the various types of shears for treating one or both sides at the same time, also the use of the usual cleaning devices, such as emery, sand, and card rolls, beaters and brushes. Grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for grey goods.

### *Singeing*

Developing and object of singeing. The construction of singers of all types, and for various purposes. The use of cooling tanks, steaming-devices, rolling and brushing attachments.

Regulation of the flame for various goods and adjustment of the parts. Gas and air pressure, water cooled rolls. The effect of moisture on the cost of singeing. The use of dry cans in connection with singeing. Electric singeing.

### *Washing*

Open width and string washers. Their construction and operation. Soaps, temperature, squeeze rolls. Washing of various goods and the object thereof. Stains.

### *Napping*

The object of napping and the usual method of treating goods. Various types of nappers—Single and Double acting. Felting nappers. Construction, grinding, and adjustment of various types.

### *Water Mangles*

Their object and the construction of various types. Various rolls, iron, husk, etc. Scutchers; their object and constructions.

### *Starch Mangles*

The object and construction of all types of starch mangles for pure starch and filled goods. Various types of rolls, brass, rubber, wood. Action of doctor blades, etc. Regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener, and fillers. The preparation of starch and various methods of application.

### *Dryers and Stretchers*

Both horizontal and vertical, tenter frames, clips. The swing motion and the finishes thus produced. Construction. Spraying machines, belt stretchers, button breakers. Their object and construction.

### *Calenders*

The object and construction of all types, including the regulation of pressure and nips for the production of various finishes. Various types of rolls and their uses, steel, husk, and paper. The use of hot and cold rolls. Chasing, friction, embossing and Schriners calenders, and the various finishes produced by each. Production of watered effects. Beetling machines.

Making up room—yarding, inspecting. Different types of folds. Pressing, papering, marking.

[COURSES I-3, VI-4]

## PHYSICAL CULTURE—I-1

This subject is required of all students registered for first year work. The course consists of general athletic exercises with small squads on the campus during the pleasant weather of the fall and spring, and exercise in the school gymnasium during the winter months. The instruction is given by the director of physical culture. Previous to the commencement of the work in the fall, each member of the class is required to submit to a thorough physical examination, a careful record of which is kept. Again at the end of the year another examination is held that progress may be noted.

The student's record depends both upon his regularity of attendance and upon the character of his work. A student who is not regular in attendance or who does not make sufficient progress in the work will be required to repeat the subject during the second year.

[ALL COURSES]

## Evening Classes

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### ENTRANCE REQUIREMENTS AND FEES

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a Grammar School are admitted upon certificate. A blank form for this will be found in the back of the catalogue. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the three weeks previous to the opening of the evening school.

The tuition rate for all students who are non-residents of Lowell is \$10.00 per course per year. Students attending courses requiring more than two nights per week are required to pay \$15.00 per year for three nights and \$20.00 for four nights.

All students whether from Lowell or elsewhere taking courses in the Chemistry and Dyeing Department must before entering the laboratory make a deposit as follows:

Course IVa	\$ 5.00 per year
Course IVb, IVc or IVd	\$10.00 per year

This is to cover the cost of laboratory breakage, supplies, apparatus and chemicals, and at the end of the year any unexpended balance is returned or an extra charge made for excess breakage.

The evening classes usually commence in the month of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses. The schedule showing the arrangements of classes for each term will be announced at the beginning of the school year.



Before entering class all students must fill out an attendance card which can be obtained at the office or from the instructors in the various departments. Any student who has filed an attendance card and who wishes to change his course, should notify the office to that effect.

## COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

No certificate will be awarded until all dues to the school have been discharged.

### 1. Cotton Spinning—2 Years

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for



a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

**IIa. Woolen Spinning—2 Years**

**IIb. Worsted Spinning—3 Years**

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

**IIIa. Textile Design—3 Years**

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in

the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

### **IIIb. Freehand Drawing—3 Years**

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of this city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

#### **IVa Elementary Chemistry—2 years**

General Chemistry including Inorganic and Organic.  
Qualitative Analysis.

#### **IVb. Textile Chemistry and Dyeing—3 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Dyeing.

#### **IVc. Analytical Chemistry—3 years**

Laboratory Work and Lectures in Quantitative  
Analysis.

#### **IVd. Textile and Analytical Chemistry—4 years**

Lectures in Textile Chemistry and Dyeing.  
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some

knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

**Va. Cotton Weaving—1 year**

**Vb. Woolen and Worsted Weaving—1 year**

**Vc. Dobby and Jacquard Weaving—1 year**

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

**VIa. Elements of Engineering—3 years**

**VIb. Mechanical Drawing—3 years**

**VIc. Machine Shop Practice—3 years**

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments

of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

**VIIa. Woolen and Worsted Finishing—1 year**

**VIIb. Cotton Finishing—1 year**

In these courses machine work is supplemented by lectures and discussions pertaining to the many finishes given to fabrics. The action of soaps, water, steam, heat and cold upon cloths containing a single type of fibre or made up of many is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics. \*



## OFFICERS OF ADMINISTRATION AND INSTRUCTION

### Principal

CHARLES H. EAMES, S. B., Massachusetts Institute of Technology, 1897. Active member of The American Society of Electrical Engineers. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell, and engineer with Stone and Webster, electrical engineers, Boston, Mass.

### Instructors

#### TENTILE ENGINEERING

- GEORGE H. PERKINS, S. B., chief instructor. Massachusetts Institute of Technology, 1899. Member American Society of Mechanical Engineers. Consulting Engineer for Lowell Bleachery. Experience: Draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood Greene and Co., Boston, Mass.
- HERBERT J. BALL, S. B., B. C. S., instructor in mechanical engineering. Massachusetts Institute of Technology, 1906; Northeastern College, 1916. Experience: Draftsman, Watertown Arsenal; Lincoln-Williams Twist Drill Co.
- ULYSSES J. LUPIN, S. B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.
- ALEXANDER D. DAVIS, B. T. E., instructor in mechanical drawing. Lowell Textile School, 1914. Experience: Lowell Machine Shop; Lowell Bleachery; Boott Mills, Lowell, Mass.; Shetucket Co., Norwich, Conn.; instructor in Textile School, South Manchester, Conn.
- ALBERT J. LINDSLEY, evening instructor in mechanical drawing. Massachusetts Institute of Technology, 1902. Experience: Resident Engineer, Waddell & Hedrick, bridge engineers of Kansas City; Track Engineer, Bay State St. Ry. Co., Boston; superintendent Old Colony Construction Co., Boston; assistant engineer, National Engineering Corporation, Boston, Mass.
- CHARLES H. JACK, instructor in machine shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.
- C. WARREN HOWE, JR., evening assistant instructor machine shop practice. Lowell Textile School, evening class, 1914. Experience: machinist, Saco-Lowell Shops, Lowell, Mass.

#### CHEMISTRY AND DYEING

- LOUIS A. OLNEY, S. B., M. S., chief instructor. Lehigh University, 1896. Member American Institute of Chemical Engineers. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.



- HOWARD D. SMITH, PH. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor Brown University and Tufts College; instructor Beloit College, Wisconsin.
- ROBERT R. SLEEPER, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz and Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- BERTRAND F. BRANN, S. B., M. S., instructor in chemistry. University of Maine, 1909. Massachusetts Institute of Technology, 1912. Experience: Instructor at University of Maine; Assistant Instructor Department of Research, Massachusetts Institute of Technology.
- RUSSELL B. STODDARD, A. B., instructor in chemistry. Clark College, 1912.
- JOSEPH W. SAWYER, B. T. D., assistant instructor in chemistry. Lowell Textile School, 1915. Experience: Price Fire and Water Proofing Company, Poughkeepsie, N. Y.

#### TEXTILE DESIGN AND WEAVING

- HERMANN H. BACHMANN, chief instructor. Gera Textile School. Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company, and Smith Webbing Company, Pawtucket, R. I.
- STEWART MACKAY, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- ANDREW YOUNGER, instructor in Design and Weaving Department. Lowell Textile School, Evening Class, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Co., Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woolen Co., Dedham, Mass.; C. A. Root Mfg. Co., Uxbridge, Mass.
- MARTIN HOELLRICH, instructor in power weaving. Lowell Textile School, Evening Class, 1910. Textile School, Reichenbach, Germany. Experience: C. F. Weiss, Helmbrechts, Germany; J. Back, Turkish Shawls, Reichenbach, Germany; Parkhill Mfg. Co., Fitchburg, Mass.; American Woolen Co., Lawrence and Winooski; Pacific Mills, Lawrence.
- E. ELIZABETH WHITNEY, evening instructor in freehand drawing. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching eighteen years.
- EDITH C. MERCHANT, evening instructor in freehand drawing. Normal Art School, 1908. Experience: Teaching, Evening Drawing School, Lowell, Mass.; Supervisor of Drawing, Pepperell, Mass.

#### COTTON YARNS

STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

LOUIS C. PLAYDON, instructor in cotton spinning. Lowell Textile School, Evening Class, 1914. Experience: Atlantic Mills, Lawrence, Mass.; Pacific Mills, Lawrence, Mass., and Dover, N. H.

GEORGE GOODCHILD, evening instructor in cotton spinning. Lowell Textile School, Evening Class, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.

#### WOOLEN AND WORSTED YARNS

EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.

JOHN N. HOWKER, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from City and Guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Maine; Arlington Mills, Lawrence, Mass.

JOHN C. LOWE, instructor in woollen and worsted yarns. Lowell Textile School, Evening Class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

#### FINISHING

ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woollen Manufacturing Company, Montreal, Canada; American Woollen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woollen and worsted yarns, Lowell Textile School.

C. LEONARD GLEN, instructor in finishing. Experience: Dunnell Mfg. Co., Pawtucket, R. I.; U. S. Finishing Co., Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

#### LANGUAGES AND HISTORY

LESTER H. CUSHING, A. B., chief instructor. Harvard College, 1911

#### PHYSICAL CULTURE

DAVID B. MOREY, S. B., Dartmouth College, 1913. Member of Philadelphia Baseball Club, American League, season 1913; Assistant Coach, Dartmouth College Foot Ball Team, Fall 1913; studied abroad on Physical Culture. Experience as coach for various teams in preparatory schools.

ARCHIBALD R. GARDNER, M. D., medical adviser. Harvard University, 1902.

## ALUMNI ASSOCIATION

The Alumni Association of the School holds its annual meeting and banquet in February of each year at the Hotel Vendome, Boston, Mass.

The membership of the Association is restricted to graduates of the day school. Honorary membership is open to the Board of Trustees, the Faculty and such others as may be elected by the Association.

The officers for the year 1917 are:

President:	James F. Dewey, '04
Vice-President:	John H. Hunton, '11
Secretary-Treasurer	Arthur A. Stewart, '00

Board of Directors: The President, Vice-President, Secretary-Treasurer, Arthur J. Hennigan, '06, for one year and Frederick D. Manning, '11, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

### ENTERTAINMENT COMMITTEE

Robert R. Sleeper, '00, <i>Chairman</i>	Royal P. White, '04
Everett B. Rich, '11	George L. Gahm, '06

## OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School as active members, and graduates of two year elementary chemistry course as associate members, and is composed of one hundred members at present.

The annual meeting is held during the winter months and the annual reunion is held some Saturday of June at a place selected by the Board of Control.

### OFFICERS

President:	Samuel J. Nichol, Lowell, Mass.
Vice-President:	James H. Spurr, Jr., Lawrence, Mass.
Secretary and Treasurer:	Alexander T. Herron, Lawrence, Mass.

### BOARD OF CONTROL

Harry Buckley, Methuen, Mass.	4 years
James W. Myers, Lowell, Mass.	3 years
Samuel Stott, Methuen, Mass.	2 years
John Nicoll, Andover, Mass.	1 year

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

For information regarding this association please apply to Alexander T. Herron, 55 Bodwell St., Lawrence, Mass.

The winner of this prize for 1916 was Harold E. Gile, Lawrence, Mass.

## AWARDS FOR PROFICIENCY IN FIRST AND SECOND YEAR CHEMISTRY

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The following is a list of awards made to day students on June 2, 1916, for proficiency in first and second year chemistry, as per Special Awards of Merit on Page 86.

FIRST:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in *First Year Chemistry*.

Awarded to Parker Wyman Longbottom.

SECOND:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in *First Year Chemistry*.

Awarded to Carroll Lewis Brainerd.

Honorable mention of Herbert Chidsey Roberts.

Honorable mention of Philip James White.

THIRD:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during the *Second Year*.

Awarded to Earl William Clark.

FOURTHS—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during the *Second Year*.

Awarded to George Henry Johnson.

Honorable mention of Frank Fendel.

Honorable mention of John Francis Fitzgerald.

FIFTHS—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best Thesis preparatory to graduation.

Awarded to George Oliver Richardson.

# **DAY CLASS OF 1916** **Graduates with Titles of Theses**

Degrees conferred as follows June 2, 1916:

- |   |                   |
|---|-------------------|
| Floyd Willington Adams,   | Lowell, Mass.     |
| Bachelor of Textile Engineering   |                   |
| "Study of Illumination Conditions in Textile Mills"   |                   |
| Thesis with R. L. Sanborn   |                   |
| John Gregory Echmalian,   | Lowell, Mass.     |
| Bachelor of Textile Engineering   |                   |
| "Study of Accident Records of Textile Mills"  |                   |
| Harold Vincent Farnsworth,  | Winchester, Mass. |
| Bachelor of Textile Engineering   |                   |
| "The New Plant of the Naumkeag Steam Cotton Company, Salem, Mass."  |                   |
| Ralph Allan Forsaith,   | Nashua, N. H.     |
| Bachelor of Textile Engineering   |                   |
| "Design for New Machine Shop Building for Lowell Textile School"  |                   |
| Leslie Balch Lamprey,   | Lawrence, Mass.   |
| Bachelor of Textile Dyeing  |                   |
| "An Investigation and Estimation of the Organic and Inorganic Materials used in Sizes for Cotton Cloth"                   |                   |
| George Ives Putnam,   | Boston, Mass.     |
| Bachelor of Textile Dyeing  |                   |
| "The Production of Para Nitraniline and Pure Beta Naphthol and their Application for the Production of Para Red on Cloth" |                   |
| George Oliver Richardson,   | Lexington, Mass.  |
| Bachelor of Textile Dyeing  |                   |
| "The Preparation of Sulphur Black"  |                   |
| Ralph Lyford Sanborn,   | Lowell, Mass.     |
| Bachelor of Textile Engineering   |                   |
| Thesis with Floyd W. Adams  |                   |

Diplomas awarded as follows June 2, 1916:

- |  |                    |
|--|--------------------|
| William John Baker,  | West Groton, Mass. |
| Chemistry and Dyeing   |                    |
| "The Neutral Salt Reaction and its Application in Textile Work"            |                    |
| James Tracy Colby,   | Manchester, N. H.  |
| Textile Engineering  |                    |
| "Economic Comparison of Steel Beams and Hard Pine Timbers for Mill Floors" |                    |
| Thesis with E. S. Cummings   |                    |
| Edward Stanton Cummings,   | Lowell, Mass.      |
| Textile Engineering  |                    |
| Thesis with J. T. Colby  |                    |



Alfred Edward Davieau,	Textile Engineering	Cochituate, Mass.
"The Effect of Inter Poles on the Operation of a Compound Wound Direct Current Motor"		
Thesis with L. D. O'Connor		
Henry Kilborn Gerrish,	Textile Design	Lowell, Mass.
Francis Henry Molloy,	Wool Manufacture	Hudson, Mass.
"The Manufacture of a Worsted Dress Goods"		
Howard Andrew Morrill,	Textile Engineering	Lowell, Mass.
"Analysis of Power and Heating Plant of Lowell Textile School"		
Thesis with H. J. Shaber		
Roger Merrill Peabody,	Wool Manufacture	Everett, Mass.
"The Manufacture of a Worsted Suiting"		
Hyman Jesse Shaber,	Thesis with H. A. Morrill	Nashua, N. H.
Lauriston Whitcombe Tyler,	Wool Manufacture	Haverhill, Mass.
"The Manufacture of a Worsted Suiting"		

## EVENING CLASS OF 1916

Certificates awarded as follows, April 12, 1916:

### COURSE Ia—2 YEARS. (Cotton Spinning)

George Emery Benson	Lowell, Mass.
Robert Herbert Burns	" "
Harold Malcolm Chicken	Lawrence, "
Harry James Hayward	" "
Richard Davis Hodgkins	Lowell, "
Gentaro Takahashi	" "
Charles Leslie Tucker	" "
William Wallace Tucker	" "

### COURSE Ia—3 YEARS. (Cotton Spinning)

David Pendlebury	Lawrence, Mass.
Eugene Snickers	Lowell, "

### COURSE IIb—3 YEARS. (Worsted Spinning)

Roy Alfred Playdon	Methuen, Mass.
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### COURSE IIIa—3 YEARS. (Textile Design)

Hammond Barnes	Lowell, Mass.
Frederic Stacey Gilley	Somerville, "
Francis Joseph Perron	North Andover, "
William Henry Rhodes	Ward Hill, "
David Patrick Sorenson	Dracut, "
Joseph Daniel Sullivan	Lowell, "

### COURSE IIIb—3 YEARS. (Freehand Drawing)

Thomas Joseph Campbell	Lowell, Mass.
Marie Alphonsine Charbonneau	" "
Julia Alice Guenard	" "
Elsie Laporte	" "
Isabella Grace Larue	" "

### COURSE IVa—2 YEARS. (Elementary Chemistry)

Winthrop Simpson Bean	Lowell, Mass.
Rupert Francis Billings	" "
Georges Amedee Bordeleau	" "
Frederick Alvin Bryden, Jr.	North Andover, "
John Joseph Burke	Lowell, "
Herschel Gilman Clough	" "
Elmer Rounds Coburn	Methuen, "
Leander Forest Conley	Lowell, "
George Edmund Crompton	" "
George Joseph Flathers	Lawrence, "
Churchill Gerry	Lowell, "
George Albin Gunther	Dracut, "
Harry Leaver	Methuen, "
Tom Peel	North Andover, "
Alfred Quance	Methuen, "
Edwin Herbert Smith	Lawrence, "
Richard Edward West	Lowell, "

**COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)**

Harold Elmore Gile	Lawrence, Mass.
Harold Wainwright	" "

**COURSE Va—1 YEAR. (Cotton Weaving)**

Willis Henry Bowles	Lowell, Mass.
Edward James Gallagher	Quincy, "
George Quartus Rooston Haithwaite	Lowell, "
George Edwin Heeley	" "
Ernest Ingle	" "
James Albert Nelson	" "
Robert Rostrom	" "
Fred Holt Taylor	" "

**COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)**

Walter Baxter	Methuen, Mass.
James Ernest Birdsall	Lawrence, "
Guy Eugene Branch	" "
John Bzowski	Lowell, "
Leon Guileaum Coolens	" "
William Keisling	North Andover, "
John Charles Lowe	Methuen, "
Louis Percival Saunders	North Andover, "
Patrick Francis Scully	Lowell, "
Miles Henry Smith	Lawrence, "

**COURSE Vc—1 YEAR. (Dobby and Jacquard Weaving)**

George Arthur Smart	Lowell, Mass.
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**COURSE VIa—3 YEARS. (Elements of Engineering)**

James Albert Cheetham	Lowell, Mass.
Walter Byron French	" "
Eugene Octave Gaudette	" "
Karl Sheppard Lunan	" "
Percy Allan McKittrick	" "
James Francis Spillane	" "
George Stewart	" "
Joseph Christopher Taff	" "
Joseph Waring	Methuen, "

**COURSE VIb—3 YEARS. (Mechanical Drawing)**

Carl William Galle	Lawrence, Mass.
Achille Gabriel Gaulin	Lowell, "
Thomas Andrew Hendricks	" "
Stanley Winfield Lund	Lawrence, "
Chester Laforest Mosher	Lowell, "
John Murphy	" "
Albert Shaw	" "
Harry Arthur Wiesberg	Lawrence, "

COURSE VI—2 YEARS. (Machine Shop Practice)

James Henry Brown	Forge Village, Mass.
Adolphe Desaillier	Lowell, "
George Eugene Fontaine	" "
Joseph John Higginbottom	" "
Joseph Davis Jubenville	" "
Lewis Doyle Lane	Lawrence, "
Abbott Lawrence	Lowell, "
John Lynch	Lawrence, "

COURSE VII—1 YEAR. (Woolen and Worsted Finishing)

Roland Monroe Gesing	Lawrence, Mass.
Alfred Joseph Gunning	Lowell, "
James McDermott	Methuen, "
Ernest Gunnar Noring	Lawrence, "
Walter Ernest Todd	Lowell, "

# REGISTER OF DAY STUDENTS

1916 - 1917

## Fourth Year

Name	Course	Address
Albrecht, Charles H.	IV-4	Dorchester, Mass.
Barlofsky, Archie	VI-4	Lowell, "
Foster, Boutwell H.	VI-4	North Tewksbury, "
Fuller, Allen R.	IV-4	Dorchester, "
Howarth, Charles L.	IV-4	Lowell, "
Irvine, James A.	VI-4	Chicago, Ill.
Perlman, Samuel	IV-4	Lowell, Mass.
Powers, Walter W.	IV-4	Boston, "
Riggs, Homer C.	VI-4	South Essex, "
Shaber, Hyman J.	VI-4	Nashua, N. H.
Sokolsky, Henry	VI-4	Lowell, Mass.
Wood, Lawrence B.	IV-4	Beverly, "

## Third Year

Berry, Wilbur F.	II	Worcester, Mass.
Brainerd, Walter E.	IV	Bradford, "
Brearley, Earl B.	IV	Lowell, "
Clark, Earl W.	IV	Salem Depot, N. H.
Conway, Coleman B., Jr.	I	Danville, Va.
de Sa, Francisco	VI-4	Bahia, Brazil
Dennett, Mahlon W.	IV	Winchester, Mass.
Dimock, Dwight L.	IV	Billerica, "
Fendel, Frank	IV	Boston, "
Fitzgerald, John F.	IV	Woburn, "
Gottesman, Louis	IV-4	Boston, "
Harlow, Ivan O.	IV	Lowell, "
Hart, Arthur N.	IV	" "
Holden, Harold H.	IV	Fitchburg, "
Johnson, George H.	IV	Haverhill, "
Lawrence, Harold E.	VI	Melrose, "
Libbee, George C.	IV	Lowell, "
Macdonald, Hector G.	IV	Beverly, "
Matthews, Elmer C.	II	Boston, "
Merrill, Gilbert R.	VI-4	Lowell, "
Moore, William J.	IV	Lawrence, "
Morris, Merrill G.	IV	Lowell, "
O'Connor, Lawrence D.	VI	Woburn, "
Palais, Samuel	IV	Roxbury, "
Parker, Hubert F.	VI	Norwood, "
Ripley, George K.	II	Troy, N. H.
Sjostrom, Carl G. V., Jr.	III	Ware, Mass.
Stevens, Raymond R.	IV-4	Dracut, "
Stiegler, Harold W.	IV-4	Lawrence, "
Sturtevant, Albert W.	IV	Lowell, "
Sunbury, Herbert E.	VI-4	Wamesit, "
Sutton, Leslie E.	I	Great Barrington, "
Zimmerman, Alexander S.	VI-4	Great Neck, L. I., N. Y.



## Second Year

Name	Course	Address
Anderson, Arthur J.	IV-4	Concord, N. H.
Ashworth, Ralph W.	II	Charlton City, Mass.
Brainerd, Carroll L.	IV	Bradford, "
Brown, Russell L.	VI-4	Haverhill, "
Chapman, Henry R.	Sp. I	Lowell, "
Cole, Elmer E.	I	South Eliot, Me.
Cone, Morris H.	Sp. III	Hartford, Vt.
Crippen, Harold E.	I	North Adams, Mass.
Davis, Harold E.	II	Franklin, N. H.
Donovan, George	I	Somerville, Mass.
Douglas, Walter S.	VI-4	Lowell, "
Everett, Charles A.	IV-4	Lawrence, "
Farley, Mortimer T.	III	Stonybrook, "
Fortin, Adelard J.	VI-4	Lowell, "
Frary, Stanley H.	I	Dover, N. H.
French, Walter B.	VI-4	Lowell, Mass.
Goodacre, Kenneth R.	VI-4	Wakefield, "
Gooding, Francis E.	IV-4	Lawrence, "
Gould, Norman C.	VI-4	Huntington, "
Hadley, Richard F.	IV-4	Billerica, "
Holden, John S.	VI-4	Attleboro, "
Hood, George C.	IV	Nashua, N. H.
Hosley, Carlton R.	IV-4	Salem, Mass.
Huber, Frederick G.	IV	East Northfield, "
Jones, Nathaniel E.	VI	Newburyport, "
Kaatze, Julius	VI-4	Lawrence, "
Kingston, Norman B.	IV	Wakefield, "
Laurin, Eric T. L.	IV-4	Lowell, "
Leonard, Bryan	VI-4	East Weymouth, "
Longbottom, Parker W.	IV-4	Sanford, Me.
McCann, Henry M.	III	Pawtucket, R. I.
McClellan, Charles W.	IV	Fall River, Mass.
Mathews, Carl E.	I	South Berwick, Me.
Mauersberger, Herbert R. C.	III	Passaic, N. J.
Mellor, James B.	VI	Newton, N. J.
Messer, Raymond B.	I	Lowell, Mass.
Moore, Otis R.	VI-4	Laconia, N. H.
Moorhouse, Dan W.	IV-4	East Bridgewater, Mass.
Mullaney, John F.	VI	Lowell, "
Parker, Lester E.	VI-4	Whitman, "
Peirce, Charles	III	Lowell, "
Pitman, Charles J.	II	Laconia, N. H.
Plaisted, Webster	II	Arlington, Mass.
Plummer, Stanley R.	III	Meirose, "
Pratt, Donald H.	I	Lowell, "
Proctor, Roger B.	II	Newtonville, "
Rider, William J.	VI-4	Danbury, Conn.
Roberts, Herbert C.	IV	Shelton, "
Ross, Edward S.	II	Boston, Mass.
Sanborn, Frank M.	VI-4	West Kennebunk, Me.
Schmiedel, Alfred G.	I	Brooklyn, N. Y.
Selden, James K.	Sp. II	Andover, Mass.
Smith, Malcolm H.	VI	Gloucester, "
Sosnowski, Jack N.	III	Boston, "
Sullivan, Joseph I.	II	Everett, "

Name	Course	Address
Sullivan, Walter J.	IV-4	Ayer, Mass.
Todd, Walter E.	III	Webster, "
Wells, Ai E.	VI-4	Lowell, "
White, Harold J.	IV-4	Shrewsbury, "
White, Philip J.	IV-4	Lowell, "
Winn, Charles L.	II	Newton Centre, "
Woo, Tsun-Kwei	VI-4	Shanghai, China

### First Year

Ackley, Eugene R.	VI-4	Nashua, N. H.
Almquist, George J.	I	Passaic, N. J.
Andrews, Freeman W.	IV	Dorchester, Mass.
Baker, Perley D.	IV	Concord, N. H.
Berg, Ralph A.	IV	Chelmsford, Mass.
Billings, Rupert F.	IV-4	Lowell, "
Brainerd, Carl E.	IV	Haverhill, "
Brandt, Carl D.	VI-4	Lowell, "
Brown, James	—	Rome, N. Y.
Burbeck, Dorothy M.	IV	Lowell, Mass.
Capotorto, Luigi	Sp. VI	" "
Charron, Edmond J.	IV-4	Nashua, N. H.
Cochran, Thomas C.	IV-4	Natick, Mass.
Dewitte, Jerome	Sp. III	Lowell, "
Dexter, George O., Jr.	VI-4	Newburyport, "
Doyle, John H.	II	North Brookfield, "
Fleischman, Myer	IV	Manchester, N. H.
Forsaith, Charles H.	VI-4	Nashua, N. H.
Gentlemen, Lawrence M.	VI-4	Kezar Falls, Me.
Goldman, Moses H.	IV-4	Dorchester, Mass.
Gurney, Wallace L.	IV	Lowell, "
Hadley, Roger C.	IV-4	Billerica, "
Harmon, Daniel H.	Sp. II	Hamilton, Canada
Henry, Rodman C.	II	Pittsfield, Mass.
Hickey, John R.	IV-4	Lowell, "
Howard, George E.	VI-4	Needham, "
Huse, Charles H.	III	Lowell, "
Lanner, Roy	Sp. VI	Wilmington, "
Larratt, John F.	III	Billerica, "
Lewis, Frank H.	VI-4	Pelham, N. H.
Lewstein, Boris	IV-4	New York, N. Y.
Libby, Irving R.	IV	Haverhill, Mass.
Locke, Arthur C.	IV	Winchester, "
Lumb, Arthur C.	Sp. VI	Lowell, "
Mason, Lloyd A.	IV-4	West Somerville, "
Merrill, Donald F.	VI-4	Brookline, "
Mirsky, Leon R.	II	Nashua, N. H.
Montgomery, Charles W.	II	North Adams, Mass.
Morse, Allyn J.	IV	Lowell, "
Nay, Frank B.	IV	Brookline, "
Noone, Paul L.	IV-4	Merrimac, "
Parsons, Brackett	VI-4	East Milton, "
Peckham, Harold L.	IV-4	Newport, R. I.
Peckham, Stockman C.	II	" "
Plummer, Ray	IV	Milton, N.H.
Quinlan William H.	VI-4	Somerville, Mass.

Name	Course	Address
Roche, Henry F.	III	Bradford, Mass.
Russell, John W.	IV-4	Lawrence, "
Sargent, Helen A.	Sp. III	Lowell, "
Scanlon, Andrew A.	IV-4	Lawrence, "
Schaetzel, Andre P.	IV-4	New York, N. Y.
Schuster, Raymond H.	II	Franklin, Mass.
Scoboria, Glendon A.	VI-4	South Chelmsford, "
Scott, Gordon M.	IV-4	Madison, Me.
Shea, Edward A.	II	Everett, Mass.
Shuttleworth, Howard <u>L.</u>	VI-4	Amsterdam, N. Y.
Smith, Herbert L.	—	Woonsocket, R. I.
Smith, Sylvanus P.	VI	Gloucester, Mass.
Stahl, Jerome G.	I	Berlin, N. H.
Squibb, Charles G.	Sp. III	Brookline, Mass.
Strickland, George H.	IV	Lawrence, "
Suhlke, Waldo E.	IV-4	Leominster, "
Thayer, Frank L.	II	Waterville, Me.
Townsend, Henry A.	II	Milton Mills, N. H.
Webster, Joseph A.	VI-4	Ward Hill, Mass.
Whittier, Sidney B.	VI-4	Waban, "
Winkler, Adolph J.	IV	Hackensack, N. J.
Wood, John M.	VI-4	Hopedale, Mass.
Wotkowicz, Michael J.	VI-4	Adams, "
Zisman, Louis S.	IV-4	Roxbury, "

# REGISTER OF EVENING STUDENTS

1916 - 1917

## Explanatory Note

Course Ia	Cotton Spinning
Course Ib	Knitting
Course IIa	Woolen Spinning
Course IIb	Worsted Spinning
Course IIIa	Textile Design
Course IIIb	Freehand Drawing
Course IVa	Elementary Chemistry
Course IVb	Textile Chemistry and Dyeing
Course IVc	Analytical Chemistry
Course IVd	Textile and Analytical Chemistry
Course Va	Cotton Weaving
Course Vb	Woolen and Worsted Weaving
Course Vc	Dobby and Jacquard Weaving
Course VIa	Elements of Engineering
Course VIb	Mechanical Drawing
Course VIc	Machine Shop
Course VIe	Mathematics
Course VII	Woolen and Worsted Finishing

## Post Graduates

Name	Course	Address
Fernley, Bert D.	VId	Lowell, Mass.
Freeman, George D.	VId	" "
Jubenville, Joseph D.	VId	" "
LaPorte, Mary E.	IIIb	" "
Larue, Isabella G.	IIIb	" "
Obst, Ehrich	VId	Methuen, "
Orrell, Ernest R.	VId	Lowell, "

## Third Year

Allen, William J.	IVb	Lawrence, Mass.
Atkinson, Reginald C.	IVb	Lowell, "
Bamber, William E.	VIa	" "
Bamford, John T.	IIIa	Lawrence, "
Barron, William E.	VIa	Lowell, "
Barry, Alma M.	IIIb	" "
Bottomley, Wilfred	VIa	Lawrence, "
Brandy, William F.	IIb-IVb	" "
Byers, Walton V.	Ia	Lowell, "
Cardell, Roswell E.	VIb	" "
Carville, Thomas J.	VIa	" "
Clark, Frank J.	VIa	" "
Coates, Alfred	VIa	Andover, "
Coffin, Charles D.	VIa	Lowell, "
Coolens, Julvin J.	IIIa	" "
Corey, John H.	VIa	" "

Name	Course	Address
Crumbie, Charles	IIb	Lowell, Mass.
Dawson, Francis P.	VIa	" "
DeSpencer, John	VIb	Lawrence, "
Drummond, Norman S.	VIa	" "
Elic, Henry J.	VIa	Lowell, "
Favreau, Venance J.	VIa	" "
Fitzgerald, Thomas J., Jr.	Ia	" "
Francis, Thayer	IIb	" "
Gallagher, Charles F.	VIa	" "
Gilley, Frederic S.	IIb	Somerville, "
Green, Frank C.	VIa	Lowell, "
Gustafson, Anders S.	VIa	" "
Hall, William H., Jr.	IIIa	" "
Hayward, Harry J.	Ia	Lawrence, "
Herron, Alexander T.	IVb	" "
Hibbert, George E.	IIIa	Lowell, "
Histen, William J.	VIa	" "
Hodgkins, Richard D.	Ia	" "
Horton, Philip S.	VIa	" "
Howker, John	IIIa	" "
Kelly, Henry J.	VIa	" "
Kiessling, Robert H.	Ia	Roslindale, "
Lane, William F.	VIa	Lowell, "
Langevin, George F.	VIa	" "
LaVigne, Andre J.	VIb	" "
Lowney, May E.	VIa	" "
Lutz, Alwin	VIa	Lawrence, "
McGeoch, James A.	IIIa	" "
McNabb, Alice M.	IIIb	Lowell, "
Martin, Frederick N.	VIa	Methuen, "
Mathison, John A.	VIa	Lowell, "
Mears, Lewis N.	IVb	Ballardvale, "
Meinelt, Theodore E.	VIa	Lawrence, "
Morrison, Nathan H.	VIa	Lowell, "
Mowatt, John	VIa	" "
Naud, Mary A.	IIIb	" "
Nicoll, John P.	VIa	Andover, "
O'Brien, Richard C.	IIIa	Roxbury, "
O'Connor, George A.	VIa	Lowell, "
O'Hearn, Patrick J.	VIa	" "
Ortel, Charles	VIa	" "
Pearson, Erwin A.	VIa-VIb	" "
Protopapis, Taxiarchis Z.	IIIb	" "
Ready, William C.	VIb	" "
Roberts, Kenneth B.	VIb	" "
Sargent, Walter J.	VIa	" "
Sawyer, Samuel S.	VIa	" "
Schultz, Hughey B.	VIb	Lawrence, "
Schwarzenberg, Raymond C.	VIb	" "
Shinkwin, Joseph F.	VIa	Lowell, "
Stribbling, J. W.	Ia	" "
Swanson, Victor E.	IVb	" "
Swatshke, Louis	VIa	" "
Switzer, Warren M.	VIa	North Billerica, "
Taff, Joseph C.	VIa	Lowell, "
Thyng, Thomas C.	VIa	Lawrence, "



Name	Course	Address
Tucke, Edward D., Jr.	VIa	Lowell, Mass.
Whiteoak, Percy	IIb	" "
Wilkinson, William L.	IIIa	North Andover, "
Wilton, George H.	IIIa	" "

## Second Year

Allard, Damase G.	VIId	Lowell, Mass.
Almstrom, August S.	VIb	" "
Anderson, Henry E.	VIb	" "
Ashworth, Richard	IIIa	North Andover, "
Ballinger, Raymond F.	VIa	North Chelmsford, "
Bangs, Harry O.	IIIa	Shirley, "
Banks, Jonas	IIIa	Lowell, "
Barrows, Ariston K.	Ia	" "
Barry, Alma M.	IIIb	" "
Bassett, George J.	VIb	" "
Bergsten, Frank A.	VIb	Chelmsford, "
Blais, Raoul J.	VIId	Lowell, "
Bouthillette, Jean	VIb	" "
Bowler, Herbert F.	VIb	" "
Brosnahan, Thomas	VIa	" "
Burnett, John M.	IIIa	Lawrence, "
Cahill, Thomas P.	VIId	Lowell, "
Campbell, Charles F. P.	VIb	" "
Chadwick, Richard G.	VIb	" "
Chadwick, Robert H.	VIa	" "
Cheney, Raymond S.	VIa	Methuen, "
Coburn, Walter F.	VIa	Lowell, "
Colman, Leon T.	IIIa	Lawrence, "
Conaton, Thomas J.	Ia	Lowell, "
Corbett, Francis P.	VIa	" "
Davidson, Carl E.	Ia	" "
Davis, Ervin	IIb	Lawrence, "
Dawson, Walter F.	IVa	Lowell, "
DeLuz, Antonio	VIId	" "
DeSpencer, John	VIb	Lawrence, "
Durgin, Edward F.	VIa	" "
Egan, John W.	VIa	Lowell, "
Eldredge, Leonard P.	Ia	" "
Fleming, Carl S.	Ia	" "
Freedman, Abraham	Ia	Dorchester, "
Funnell, James C.	Ia	Lowell, "
Gagnon, Marie C.	IIIb	" "
Gearin, John W.	VIa	" "
Gooch, Ralph R.	Ia	" "
Goulet, Joseph A.	VIId	" "
Graves, John F.	VIa	" "
Greenwood, William	VIb	" "
Grimes, Henry D.	IVa	Lawrence, "
Grocock, Joseph F.	IIIa	Boston, "
Grons, Edward	IIIb	Lowell, "
Hall, Harry W.	VIb	" "
Hamilton, Birger E.	IVa	" "
Hamilton, William G.	IIIa	" "
Hanson, Albert E.	Ia	" "

Name	Course	Address
Hanson, Edwell J.	VIb	Lowell, Mass.
Harrall, Shepard	Ia	" "
Harrison, Franklin R.	IIb	Methuen, "
Heavey, Thomas J.	IVa	Tewksbury, "
Hedlund, Oscar E.	VIb	Lowell, "
Herrick, Robert F., Jr.	Ia	" "
Higginbottom, Harold J.	IVb	Lawrence, "
Higginbottom, Joseph J.	VIa	Lowell, "
Hill, Raymond A.	IVa	Methuen, "
Hoh, Clemens C.	IIb	" "
Innes, Archibald K.	IVa	Lawrence, "
Jamieson, Robert E.	VIa	Lowell, "
Kannheiser, Frank J.	IVa	Lawrence, "
Kearney, Thomas K.	Ia	Lowell, "
Kellett, Harold I.	IIIa	Lawrence, "
Kennedy, Leo J.	IVa	Lowell, "
Kenney, Raymond J.	IVa	" "
Kerrigan, Herbert T.	VIb	" "
Labatte, Philomena U.	IIIb	" "
Lakin, Leroy T.	VIa	North Chelmsford, "
Lamarre, Yvonne A.	IIIb	Lowell, "
Lambert, Lulu M.	IIIb	" "
LaPorte, Eva E.	IIIb	" "
Learned, Frank E.	IIIa	Methuen, "
Leaver, Frederick W.	Ia	" "
L'Heureux, Joseph L.	VIb	Lowell, "
Logan, Robert F.	IIIa	Lawrence, "
Louporet, George J.	IVa	Lowell, "
McDermott, Thomas R.	IVa	" "
McGill, Charles F.	IIIa	" "
MacLean, Eliot B.	VIb	" "
Magee, William J.	IVa	Lawrence, "
Malley, Albert J.	IIb	" "
Mathews, William T.	Ia	Lowell, "
Matthews, Hugh J.	Ia	" "
Merrill, Gilbert R.	VIa	" "
Millman, Frederick E.	Ia	" "
Mills, Forrest A.	VIa	North Chelmsford, "
Moffatt, Elmer W.	Ia	Lowell, "
Morin, Alphonse W.	VIa	" "
Moss, Joseph	VIa	" "
Mulreany, John F.	IVa	Lawrence, "
Murphy, Robert P.	IVa	Tewksbury, "
Murphy, Thomas J.	VIa	Lowell, "
Neel, Andrew, Jr.	IVb	Lawrence, "
Nichol, Samuel J.	IVc	Lowell, "
O'Connell, Walter J.	IVa	Andover, "
Odel, Arthur O.	IVa	Lowell, "
Palm, Herbert E.	Ia	" "
Parker, Charles L.	IVa	Lawrence, "
Parkhurst, George E.	IVa	" "
Patterson, Alfred H.	IIb	" "
Patterson, Frank N.	IIb	" "
Paul, Frank M.	Ia	Lowell, "
Picard, Marie B. C.	IIIb	" "
Pickles, Arthur	IIb	Lawrence, "

Name	Course	Address
Pihl, Mansfred M.	VIId	Lowell, Mass.
Poore, Herbert E.	IVb	Lawrence, "
Preble, George A.	IVb	Lowell, "
Prisley, Frederic A.	IVa	Lawrence, "
Quinn, Joseph F.	IIIb	Lowell, "
Rogers, Eugene J.	VIb	" "
Rutledge, Robert J.	Ia	" "
Ryan, Michael	VIId	" "
Salter, William T.	Ia	Arlington, "
Sandner, Charles A.	IIb	Methuen, "
Scott, John W.	IIa	Ballardvale, "
Shaw, William	Ia	Lowell, "
Shine, Timothy C.	IVb	Lawrence, "
Slater, Arthur C.	IVa	North Andover, "
Slater, Hartley	IIb	Methuen, "
Smith, Albert	VIb	Lowell, "
Smith, Joseph	VIId	" "
Stewart, Warren D.	IVc	" "
Talbot, Joseph	IVa	Lawrence, "
Tellier, Mary B. A.	IIIb	Lowell, "
Thibodeau, Rodrigue A.	IIIb	" "
Thomas, Fred N.	IIb	Methuen, "
Thornhill, Charles A.	IVa	Lawrence, "
Toepler, Carl	IVa	" "
Tremblay, Joseph A.	IVa	Lowell, "
Walsh, Mary J.	IIIb	" "
Ward, Charles	VIb	Lawrence, "
Wehinger, Claude A.	IVa	Lowell, "
Wheeler, Harry L.	Ia	" "
Whiteoak, Percy	IIb	" "
Whitley, Walter R.	VIb	Lawrence, "
Wiggin, Frederick N.	Ia	Lowell, "
Wilde, Herman E.	IVb	Lawrence, "
Winship, Roger	Ia	Lowell, "
Yeates, Percy E.	Ia	Boston, "

### First Year

Abbott, Benjamin B.	VIId	Lawrence, Mass.
Ackley, Austin F.	IVa	Lowell, "
Ackley, Clarence E.	VIId	" "
Almquist, George J. E.	VIe	" "
Almstrom, August S.	VIId	" "
Anderson, Anthony F.	VIa	West Tewksbury, "
Anderson, Harry	VIb	Lowell, "
Anderson, Hilding R.	VIb	" "
Armstrong, John W.	IVa	" "
Ashworth, Ralph W.	VII	" "
Asselin, Emilien	VIa	" "
Axon, Charles M.	Vb	Andover, "
Ayer, Alvah H.	Ia	Lowell, "
Azadian, Setrak	IVa	" "
Bailey, Edmond L.	IVa	" "
Bailey, Edward T.	VIId	" "
Bamber, William E.	VIa-VIe	" "

Name	Course	Address
Bannister, Joseph	VId	Lowell, Mass.
Barrón, Fred H.	IIb	Lawrence, "
Barrow, Albert E.	VIa	" "
Barrows, Raymond M.	VIb	Lowell, "
Barton, Hollis	VIa	" "
Bassett, George J.	VIb	" "
Bates, Thomas A.	VIb	" "
Bean, Winthrop S.	IVc	" "
Beaven, Harry J.	VIb	" "
Bee, Thomas R.	VIb	Lawrence, "
Bell, Charles	VIb	Lowell, "
Bergeron, Ernest	VId	" "
Bergsten, Frank A.	VIc	Chelmsford, "
Bernard, Joseph E.	VIa	Lowell, "
Bernier, Leo A.	VIa	" "
Bernier, Noel A.	VIb	" "
Berry, Paul	VIb	" "
Besner, Oscar B.	VIb	" "
Bigelow, Ernest Q.	VIb	Pelham, N. H.
Bigwood, Waldo E.	IVa	Boston, Mass.
Birchall, John E.	VIa	Lowell, "
Black, David E.	IVa	" "
Blades, Albert H.	IVa	Lawrence, "
Blanchard, John W.	VId	Lowell, "
Blanchette, Lucien A.	IVa	" "
Blazon, Armand G.	VIa	" "
Bleakley, Frank E.	VIb	" "
Boardman, Herbert E.	Vb	Lawrence, "
Bohne, Frederick C.	Vb	Methuen, "
Bolan, John J.	Ia	Lowell, "
Bolduc, Louis J. Z.	VIa	" "
Bordeleau, George A.	IVc	" "
Bossee, Adelard J.	Vb	" "
Boulay, Albert A.	VId	" "
Bourke, Fred J.	VId	" "
Bower, Ernest F.	IVa	Methuen, "
Bowers, John J.	VIa	Lowell, "
Bowie, Roland J.	VIa	Lawrence, "
Boyle, John E.	IVa	Lowell, "
Boyle, Peter J.	VId	" "
Brahos, George	Va	" "
Brainerd, Albert C.	IIIa	Lawrence, "
Brainerd, Harry C.	IIIa	" "
Branch, Guy E.	VII	" "
Branchaud, Arthur	VIa	Lowell, "
Brandy, James A.	IIb	Lawrence, "
Bray, James E.	VIb	Lowell, "
Bredbury, Joseph F.	IVa	Lawrence, "
Brennan, Charles F.	VIt	Lowell, "
Brennan, Josephine C.	IIIb	" "
Briere, Joseph W.	VIa	" "
Brosnan, James F.	VIb	" "
Brouillette, Romeo P.	VIb	" "
Brown, Harry	IIa	North Andover, "
Brown, Josiah G.	IVa	Lawrence, "
Bruce, William	VII	North Andover, "

Name	Course	Address
Bryden, Frederick A., Jr.	IVb	North Andover, Mass.
Buckley, Charles L.	VIa	Lowell, "
Bunting, Walter F.	VIa	Lawrence, "
Burke, George F.	VIa	Lowell, "
Busfield, Manning H.	Ia	" "
Byrne, Edward J.	VIa	Lawrence, "
Cahill, John J.	VIIb	Lowell, "
Cahill, Joseph W.	VIa	" "
Cahill, Paul J.	VIa	" "
Campbell, Frank J.	VIa	" "
Cardell, Roswell E.	VIE	" "
Carlson, Albert H.	VIIb	" "
Carlson, Harry	VId	West Chelmsford, "
Carmichael, Clarence	Ia	Methuen, "
Carpenter, Arthur H.	VIa	Lowell, "
Carragher, Bernard	VIa	" "
Carruthers, Joseph, Jr.	VId	" "
Carville, Thomas J.	VIa	" "
Casey, William F.	VIIb	" "
Cassidy, Joseph H.	IVa	Lawrence, "
Castor, Carl A.	VIIb	Lowell, "
Chadwick, Robert H.	VId	" "
Cheetham, James A.	Va-VIE	" "
Cheetham, John J.	VIE	" "
Cheney, Harold G.	VId	" "
Choquette, Ephraim J.	VIIb	" "
Chorlton, Percy A.	VIa	North Andover, "
Christison, Francis O.	VIIb	Methuen, "
Cinqmars, Adelard D.	IIIa	Lowell, "
Clark, John W.	VIa	" "
Clarke, Henry J.	VIa	" "
Clifford, Robert C.	VIa	" "
Clough, Arthur	IIB	Methuen, "
Clough, Herschel G.	IVb	Lowell, "
Coburn, Elmer R.	IVb	Methuen, "
Cochrane, Delwin A.	VIE	Lowell, "
Coffin, Charles D.	VIa-VIE	" "
Colburn, Percy H.	VIIb	" "
Cole, Elmer E.	Ia	" "
Collins, Harold A.	VId	" "
Collins, John J.	VIIb	" "
Conaton, Thomas J.	Va	" "
Condon, Richard E.	VIIb	" "
Cone, Morris H.	VII	" "
Conley, John F.	VId	" "
Conley, Leander F.	IVb	" "
Conlon, Martin	VId	" "
Connor, Joseph A.	IVa	" "
Connors, Irene C.	IIIb	" "
Conway, John E., Jr.	VIa	" "
Coolens, Leon G.	Va	" "
Cooper, James W.	VIa	" "
Coppen, William F.	VIa	" "
Coppens, Caesar	IIIa	" "
Corcoran, Andrew A.	VIa	" "
Corey, James E.	VIa	" "



Name	Course	Address
Corfield, Fred	VIa	Lowell, Mass.
Corkery, Raymond F.	Va	" "
Corriveau, Wilfrid A.	Va	" "
Corson, Arthur L.	VIa	" "
Cossette, Arthur P.	VIa	" "
Costello, Thomas	Vb	" "
Couture, Lucien J.	Ib	" "
Crabtree, Henry J.	VIa-VId	" "
Crandall, Stanley M.	VIa-VIe	" "
Crawford, Caroline W.	IIIf	" "
Crockett, Lyman C.	VIa	North Chelmsford, "
Crompton, George E.	IVc	Lowell, "
Cronin, William P.	VIa	Ballardvale, "
Crowley, Harold F.	VIa	Lowell, "
Crowley, Joseph L.	Ia	" "
Cullen, John	Va	" "
Cullen, Walter J.	VIb	Lawrence, "
Cullinan, James	VId	Lowell, "
Cummings, Edward S.	IVb	" "
Curtin, Ralph F.	IIf	Lawrence, "
Daigle, Emile J.	VIa	Dracut, "
Daigle, Israel J.	IIIa	" "
Daigle, Joseph E.	VIa	" "
Dailey, Felix F.	VIb	Lowell, "
Dalton, Harry C.	IIIa	Andover, "
Daly, Thomas W.	VIa	Lowell, "
Darby, Austin M.	IVa	" "
Davis, Ervin	VIb	Lawrence, "
Dawson, Francis P.	VIa-VIe	Lowell, "
Dawson, George R. B.	VIa	" "
Dawson, John E.	IIf	Lawrence, "
Dean, Arthur	VII	Lowell, "
Dean, Edward R.	IIIf	" "
Dean, Walter E.	VIa	Lawrence, "
Decelle, Emile J.	VIa	Tewksbury, "
Decoteau, Ferdinand	VIb	Lowell, "
Degnan, John F.	VIb	Lawrence, "
Delehanty, Stephen E.	VId	Lowell, "
Deleu, Arthur	Vb	Lawrence, "
Delgado, Robert	Ia	Lowell, "
Demers, Adolphe	VIb	" "
Demers, Leo	VIa	" "
Delmore, John J.	VIa	" "
Desmarais, Irene M. B.	IIIf	" "
Devine, Arthur B.	VIb-VIe	" "
Dexter, George O., Jr.	VIe	" "
Dick, James C.	IIIa	" "
Dietsch, William	IIIa	Lawrence, "
Diman, Lewis B.	IIa-IIIa	Lowell, "
Dionne, Charles A.	VIb	" "
Dionne, Elzear J.	VIb	" "
Dionne, Louis L.	IVa	" "
Dixon, Joseph	Ia	Methuen, "
Dobbs, Roy F.	IIf	Lowell, "
Dolan, Martin F.	VIa	" "
Donohue, John, Jr.	Ia	" "

Name	Course	Address
Doran, George H.	VIa	Lowell, Mass.
Downing, Frank L.	VIb	Lawrence, "
Doyle, Joseph A.	IVa	" "
Doyle, John H.	VIe	Lowell, "
Doyle, Thomas W.	IVa	" "
Drescher, George J.	Vb	Lawrence, "
Drouin, William J.	VIa	Lowell, "
Drury, Chester	IIIa	" "
Ducharme, Albert J.	VIa	" "
Ducharme, Joseph W.	VIb	" "
Duemling, Karl E.	VIId	" "
Duggan, John F.	VIId	" "
Dulligan, Charles E.	IVc	" "
Duncan, George W.	VIa	" "
Duplessis, Edmund J.	VIb	" "
Durham, William R.	VIb	" "
Dwyer, David H.	IIIb	" "
Earle, Edward M.	VIb	" "
Efantes, Apostolos K.	Ia	" "
Egan, John W.	VIa	" "
Eldredge, Leonard P.	Ia	" "
Elie, Frederick J.	VIa	" "
Elie, Henry J.	VIe	" "
Ellershaw, Donald	VIa	Methuen, "
Emmett, William	IIb	North Andover, "
Entwistle, Warren	VIa	Lowell, "
Espinola, Manuel J.	VIa	" "
Everett, Kenneth C.	IVa	" "
Fairburn, George	IVa	Lawrence, "
Farley, Mortimer T.	Ia	Lowell, "
Farnsworth, Harold V.	IVb	Winchester, "
Favreau, Venance J.	VIA-VIe	Lowell, "
Field, William J.	VIa	" "
Fieldhouse, Ernest	IIIa	Methuen, "
Fielding, Frank H.	IIIa	Lawrence, "
Fischer, Herman C.	VIb	" "
Fitzgerald, William E.	VIa	Lowell, "
Flagg, Paul F.	VIa	" "
Fleming, Carl S.	Ia	" "
Fluet, Joseph A.	VIa	Lawrence, "
Forsaith, Ralph A.	IVb	Lowell, "
Fortier, Alderic W.	Va	" "
Foss, Eugene E.	Vb	" "
Foster, William M.	IVa	" "
Fox, Charles F.	VIb	" "
Frank, Merle	VIb	" "
Frappier, Leo F.	Ib	" "
Freedman, Abraham	Ia	Dorchester, "
French, Raymond C.	Vb	Lawrence, "
Fritz, Carl C.	VII	" "
Frye, Lester E.	Vb	Lowell, "
Funnell, James C.	Va	" "
Furch, Robert, Jr.	IIIa	Andover, "
Gaffney, Louise E.	IIIb	Lowell, "
Gagnon, Joseph A.	VIa	" "
Gagnon, Rene A.	VIb	" "

Name	Course	Address
Gallagher, Mary K.	IVa	Lowell, Mass.
Gardiner, Raymond E.	VIa	" "
Garnett, Gilbert	VIa	" "
Garvey, James J., Jr.	Vb	" "
Gaudette, Eugene O.	VIb	" "
Gaulin, Achille G.	VIId	" "
Gearin, John W.	VIa	" "
Geary, William F.	VIb	" "
George, Ernest F.	VIa	" "
Gervais, Armand S.	VIId	" "
Gervais, Joseph A.	Ib	" "
Gesing, William J.	IIIa	Lawrence, "
Gifford, Fred O.	IVa	Methuen, "
Gile, Harold E.	IVc	Lawrence, "
Giles, Ferdinand D.	VIb	Lowell, "
Gill, Peter	VIa	" "
Gillespie, George L.	IIIa	" "
Gillogly, James J.	VIa	" "
Ginsburg, Samuel	VIe	" "
Gionet, Arthur W.	IIIa	" "
Girard, Theodore A.	VIa	" "
Goodwin, Wesley C.	VIId	" "
Gordon, Hardy H.	IIIa	" "
Graffam, John H.	VIa	" "
Graham, Frederic T.	VIa	" "
Graller, Peter	VIa	" "
Green, Frank C.	VIe	" "
Greenhalge, Frank C.	IIIa	" "
Greenwood, Edgar	VIId	" "
Greenwood, Frank J.	Vb	" "
Greenwood, George E.	VIb	" "
Greenwood, George F.	VIId	Nashua, N. H.
Grimes, Henry D.	IVa	Lawrence, Mass.
Grons, Edward	VIb	Lowell, "
Grout, Walter T.	IIb	Andover, "
Gunther, George A.	IVb	Dracut, "
Hackney, David D.	VIa	Andover, "
Hager, Wilbur	VIa	Lawrence, "
Hanifin, James W.	VIb	Lowell, "
Hanson, Albert E.	Ia	" "
Harnden, Edward	VIa-VIb	" "
Harrington, William F.	VIa	" "
Harris, Alfred	IIb	Dorchester, "
Hart, Warren E.	IIIa	Andover, "
Hartman, Felix L.	Ia	Lowell, "
Hartwell, Charles W.	VIa	" "
Harvey, Edgar H.	VIe	" "
Hatch, Leo G.	VIb	" "
Heaton, Thomas E.	IVa	Methuen, "
Hebert, Joseph E.	VIa	Lowell, "
Henderson, Irving R.	VIa	Lawrence, "
Hendricks, Thomas A.	VIe	Lowell, "
Hendry, Robert A.	IIIa	Lawrence, "
Herrick, Robert F., Jr.	Ia	Lowell, "
Higgins, Wm.	IVa	Lawrence, "
Hill, Everett R.	VIa	Lowell, "

Name	Course	Address
Hill, Mabel I.	IIIb	Lowell, Mass.
Hodgkins, Richard D.	IIIa	" "
Hogan, George	VIa	Lawrence, "
Hopkinson, Herbert E.	Ia	Lowell, "
Horne, Percy E.	VIe	North Billerica, "
Horne, Tracy L.	VIe	" " "
Houghton, William P.	Ia	Lawrence, "
Howarth, Michael	VId	Lowell, "
Hubert, Arthur H.	VIb-VIe	" "
Hurd, Eugene F.	Ia	" "
Hutchins, Elmoe L.	VIa	" "
Hsley, Lilla C.	IIIb	" "
Ingle, Ernest	Va	" "
Jenness, George W.	VIa	" "
Jodoin, Arthur J.	VIa	" "
Johnson, Alfred N.	VIa-VIe	" "
Johnson, Carl A.	VIa	" "
Jones, Andrew C.	VIb	" "
Jones, James	VIa	" "
Kane, William L.	VIa	" "
Katz, Elliott	IVa	" "
Kearney, Gerald P.	IIb	" "
Kearney, Thomas K.	Ia	" "
Keefe, Thomas E.	VIa	" "
Kelley, James C.	VId	" "
Kelly, Frederick J.	VIb	" "
Kelly, Henry J.	VIe	" "
Kelly, Thomas F.	IVc	" "
Kelly, Thomas F.	VIa	" "
Kenyon, Herbert	VIa	" "
Kephalaiaas, Nicholas V.	VIb	" "
Kerrigan, Herbert T.	VIe	" "
Kiessling, Robert H.	Ia	Roslindale, "
Kinghorn, William	VIa	Lowell, "
Kitchen, Walter G.	Ib	" "
Kivel, Laurence	IIb	Lawrence, "
Kreyling, Oldham A.	IVa	Lowell, "
LaBrecque, Arthur L. J.	IVa	" "
LaBrecque, Ernest J.	VIa	" "
Laflamme, Joseph A.	VJa	" "
Lafleur, Lester H.	VIa	" "
Lake, Charles S.	Va	" "
Lakin, Edward C.	VId	North Chelmsford, "
Lallas, Michael G.	VIb	Lowell, "
Landry, George	Va	" "
Lane, William F.	VIe	" "
Langelier, Willie W.	IIIb	" "
Langford, Frederick T.	VII	Methuen, "
Lannon, James W.	VIa	Lowell, "
LaPointe, Emile R.	VIb	" "
Laporte, Wilfred S.	VId	" "
Laurin, Alma R.	IIIb	" "
Laurin, Harold E.	VIb	" "
Lawliss, Charles A.	VIb	" "
Lawlor, Jane F.	IIIb	North Andover, "
Laycock, Berry	VII	Lowell, "

Name	Course	Address
Laycock, Joseph G.	IVc	Lowell, Mass.
Leach, Fred	VIa	Methuen, "
Leaver, Harry	IVb	" "
Leavitt, John F.	VIe	Lowell, "
Lehnert, Howard F.	VII	Lawrence, "
Lemieux, Joseph	Ib	Lowell, "
Lemire, Joseph H.	VIa	" "
Lepene, Edmund G.	VIa	" "
Lewstein, Boris	VIe	" "
Lindstrom, Fritz A.	VIb	" "
Littlefield, Sheldon E.	Ia	" "
Livesey, Dennis	VIId	" "
Lodge, Alfred M.	IIb	Methuen, "
Lomas, Harry	VIe	Lowell, "
Lorigan, Charles J. W.	VIId	" "
Lougee, Wesley T.	VIa-VIe	" "
Low, James	Ia	Andover, "
Lowe, John C.	IIIa	Methuen, "
Lunan, Karl S.	VIb-VIe	Lowell, "
Lutz, Leo A.	Vb	Lawrence, "
Lutz, Paul B.	Vb	" "
Lynch, Cornelius P.	VIa	Lowell, "
McCabe, Charles F.	VIa	" "
McCann, Henry M.	IIIa	" "
McCann, James J.	Vb	Lawrence, "
McCarthy, George P.	VIb	Lowell, "
McCarthy, Luke E.	IIIb	" "
McCoombs, Alton H.	VIb	" "
McClellan, Charles W.	Ia	" "
McCrary, Wilbur J.	IVa	" "
McCusker, Joseph F.	VIId	" "
MacDonald, Clifford	VIa	" "
MacDonald, John F.	IIIb	" "
McDougall, Albert T.	VIb	" "
McGarvey, Joseph T.	VIb	" "
McGill, Francis J.	VII	" "
McGlinchey, John J.	Ib	" "
McGuire, James W., Jr.	VIb	" "
MacKenney, Esther M.	IIIb	" "
MacKenney, Harold E.	VIb	" "
McKniff, James J.	VIa	" "
McLaughlin, John E.	VIa	" "
McManus, Patrick J.	VIa	" "
McMillen, George N.	VIa	" "
McNerney, Edward J.	VIa	" "
McNiven, Alexander	VII	Lawrence, "
McQuade, Hugh B.	VIId	Lowell, "
Mack, Alice H.	IVa	" "
Macy, Bernard G.	IIa	Roslindale, "
Madden, James H.	IIb	Lawrence, "
Madden, John W.	IIb	" "
Magner, John J.	IVa	Lowell, "
Magrath, William F.	VIa	Lawrence, "
Maguire, Frederick H.	VIa	Lowell, "
Mahan, Eugene L.	VIb	" "
Major, Leo C.	Ib	" "



Name	Course	Address
Malo, Victor H.	VIId	Lowell, Mass.
Malonson, Richard R.	IIIb	" "
Marshall, Benedict	Ia-VIa	" "
Marshall, John J.	VIa	" "
Martel, May A.	IIIb	" "
Martin, William C.	VIa	" "
Mathewson, Charles S.	IVa	" "
Mathison, Charles W.	VIa	" "
Mathison, John A.	VIa-VIe	" "
Meehan, John F.	VIId	" "
Merrill, Clifford L.	VIb	" "
Merrill, Gilbert R.	Vb	" "
Miller, Charles F.	VIb	Lawrence, "
Millman, Frederick E.	Ia	Lowell, "
Mills, Arvin R.	VIId	" "
Milne, David C.	VIb	" "
Mineau, Albert J.	IIIb	" "
Mingins, Charles R.	IVa	Methuen, "
Moffatt, Elmer W.	Ia	Lowell, "
Molloy, John J.	VIb	" "
Molloy, Michael A.	VIId	" "
Moody, Edwin C., Jr.	VIa	Ballardvale, "
Morgan, Harry W.	IIb	Lawrence, "
Morgan, Michael D.	IVa	Lowell, "
Morin, Cyrille A.	VIa	" "
Morin, Eli A.	VIb	Lawrence, "
Morley, Raymond F.	VIb	Billerica, "
Morrison, Nathan H.	VIe	Lowell, "
Morrison, William A.	IVa	" "
Moynahan, Andrew J.	VIa	" "
Muldoon, Francis A.	VIId	" "
Mullin, James	IIa	" "
Murphy, John	VIe	" "
Murphy, William J.	VIId	" "
Nay, Frank B.	VIe	" "
Neel, James B.	IVa	Lawrence, "
Neild, Charles T., Jr.	VIa	Lowell, "
Nichols, Romaine G. C.	VIb	" "
Nicoll, John P.	VIb	Andover, "
Noring, Ernest G.	Vb	Lawrence, "
Normandy, John E.	VIId	Lowell, "
Norris, John A.	VIb	Lawrence, "
Noval, Jean A.	IIIb	Lowell, "
Novell, Arthur M.	VIb	" "
Nussey, Herbert	VIa	" "
Nystrom, Urno A.	Ia-VIe	" "
O'Brien, Alice	IVa	" "
O'Brien, Harold J.	VIb	" "
O'Brien, John A.	Ia	" "
O'Brien, Richard C.	VII	Roxbury, "
O'Brien, William W.	VII	Lawrence, "
O'Connor, George A.	VIa-VIe	Lowell, "
O'Donnell, John W.	VIa	" "
O'Hagan, Christopher	VIId	" "
O'Hearn, Patrick J.	VIa	" "
Oldfield, Frank	IVa	Lawrence, "

Name	Course	Address
Oliver, John W.	IIIa	Lowell, Mass.
O'Loughlin, John	VId	" "
Ortel, Charles	VId-VIe	" "
Osterman, Algot	VIa	West Tewksbury, "
Ouellette, Emily	IIIb	Lowell, "
Owens, Daniel J.	VIa	" "
Page, Harvey J.	VIB	" "
Palmer, Earl C.	VIa	" "
Palmer, Ray L.	IVa	" "
Palmer, Thomas R.	IIIa	Lawrence, "
Palmer, William H.	VIa	Lowell, "
Palmgren, Oscar F.	VIB	" "
Paquette, Alice C.	IIIb	" "
Paquette, Armand J.	VId	" "
Parent, Louis J.	Ib	" "
Pariseau, Frank A.	VId	" "
Park, Emmett E.	VIB	" "
Parker, Harry	VIB-VId	" "
Parker, Hubert F.	VIe	" "
Parsons, Brackett	VIe	" "
Pascall, Herbert G.	VIB	" "
Paterson, Alexander W.	VIa	" "
Patterson, James A.	VIa	" "
Pearson, Harry W.	VIa-VIe	Dracut, "
Peel, Tom	IVb	North Andover, "
Peever, Alfred	IVa	Methuen, "
Peirce, Charles	Ia	Lowell, "
Pekarski, Louis A.	Vb	Lawrence, "
Perron, Francis J.	VII	North Andover, "
Peterson, Frank L.	Ia	Lowell, "
Petty, John	Ia	Methuen, "
Philbin, Philip M.	IVa	Lowell, "
Picking, Richard E.	VIa	Westford, "
Pickles, Stanley	VIB	Methuen, "
Pihl, Arthur	VIa	Lowell, "
Pilcher, Walter H.	VIa	" "
Pingree, Carroll L.	VId	" "
Pitman, Charles J.	Ia	" "
Plumer, Paul T.	VId	" "
Plunkett, Francis D.	VIB	" "
Poole, Morrison D.	VIa	" "
Porter, Ralph F.	VIB	" "
Porter, William E.	VIB	" "
Powers, John J.	VIa	" "
Powers, Roy G.	VId	" "
Pratt, Donald H.	Ia	" "
Procter, Robert	VIa	" "
Proctor, Roger B.	IIb	" "
Proulx, Albert J.	VId	" "
Putnam, Alonzo, Jr.	VIB	" "
Putney, Clifton C.	IVa	Merrimac, "
Quance, Alfred	IVb	Methuen, "
Ralls, Myles F.	VIB	Lowell, "
Ramos, Manuel S.	VIa-VId	" "
Rancourt, Joseph D.	VIa	" "
Rapteas, Peter	VIa	" "

Name	Course	Address
Ray, Delbert E.	IVa	Lowell, Mass.
Reed, Norman B.	VIId	" "
Regan, Edward R.	IIIa	" "
Reilly, John B.	VIa	" "
Rhodes, William H.	IVa	Ward Hill, "
Richard, Eugene T.	VIa	Dracut, "
Richardson, Lawrence E.	IIIa	Lowell, "
Ringwood, Geoffrey J.	VIb	" "
Rivinius, Handel V.	Ia	" "
Roach, Albert F.	VIId	" "
Robertson, Robert, Jr.	VIa	" "
Robillard, Hector E.	VIa	" "
Rodger, Charles E., Jr.	IIIb	" "
Rodgers, Alfred F.	VIa-VIe	" "
Rogers, Clarence T.	VIa-VIe	" "
Rogers, Hugh R.	VIa	Tewksbury, "
Rogers, Roland W.	VIa-VIe	Lowell, "
Rostron, Helena	IVa	North Andover, "
Rostron, John	VIa-VIe	Lowell, "
Rostron, Robert	Va	" "
Roth, Ella	IIIb	Dracut, "
Rousseau, Joseph E.	Ia	Lowell, "
Rowe, John V.	Va	" "
Roy, Emile	VIa	" "
Roy, Leo J.	VIa	" "
Ruckledge, Thomas	IVa-VIa	" "
Rutledge, Robert J.	Va	" "
Ryan, William J.	VIa	" "
Sabourin, Ethel E.	IIIb	" "
Sainis, Stephanos S.	IVa	" "
Salmon, John E.	VIId	" "
Salter, William T.	Ia	Arlington, "
Sanger, Clarence F.	VIa	Lowell, "
Sargent, Walter J.	VIe	" "
Sarno, Adam	VIa	" "
Saunders, Kenneth E.	IIIb	" "
Schuster, Raymond H.	VII	" "
Scoboria, Glendon A.	VIe	South Chelmsford, "
Scully, James P.	Vb	Lowell, "
Searle, Edward H.	Ia	Methuen, "
Sehlstedt, Gustaf	VIb	Lowell, "
Severance, Malcolm B.	IVa	Lawrence, "
Sexton, Joseph H.	VIId	Lowell, "
Shaihan, Arthur J.	Ia	" "
Shapiro, Benjamin	VIb	" "
Sharples, Lloyd K.	VII	Haverhill, "
Shaughnessy, John J.	IIIa	Lowell, "
Shea, Daniel J.	VIa	" "
Shea, Joseph D.	VIa	" "
Shearer, William A.	Vb	Lawrence, "
Sheriff, William	IVa	" "
Sherman, Theodore	IVb	Lowell, "
Shinkwin, Joseph F.	VIe	" "
Shuttleworth, Howard L.	VIe	" "
Silcox, Frederick E.	VIe	" "
Simmons, Walter M.	VIa	Lawrence, "

Name	Course	Address
Skelton, William E.	IIIb	Lowell, Mass.
Slattery, Michael F.	VIa	" "
Sloane, John R.	Ia	" "
Smith, Edwin H.	IVb	" "
Smith, George A.	Ia	" "
Smith, John H.	IIIb	" "
Smith, Miles H.	VII	Lawrence, "
Snell, Thomas	VIb	Lowell, "
Sotiropoulos, George A.	VIa	" "
Sparks, Thomas F.	VIb	" "
Speed, Frederick H.	VIb	Lawrence, "
Spencer, Arthur T.	VIb	Lowell, "
Spencer, Robert E.	VIb	North Billerica, "
Stahl, Jerome G.	VIe	Lowell, "
Stark, Buell B.	VIb	" "
Stone, Edward	VIId	" "
Stone, Ralph A.	VIa	Lawrence, "
Sturtevant, Earl N.	VIb	Lowell, "
Sullivan, Arthur J.	VIa	" "
Sullivan, Edward B.	Va	" "
Summersby, William C.	Ia	Lawrence, "
Sutcliffe, William E.	IIIa	Methuen, "
Swatshke, Louis	VIe	Lowell, "
Sweeney, Frank E.	IIIa	" "
Swenson, Arthur S.	VIa	Andover, "
Sykes, Alvin E.	Ia	Lowell, "
Taff, Edward H.	VIa	" "
Taff, Joseph C.	VIe	" "
Taff, Joseph W.	VIa	" "
Taft, James C.	Ia	" "
Taylor, Albert	VIb-VId	" "
Teague, Patrick J.	VIa	" "
Teague, Thomas F.	VIa	" "
Thayer, Frank L.	Ia	" "
Thetoplus, George	Ia	" "
Thomas, Franklin W.	VIa	Dracut, "
Thomas, Harold	IVa	Lowell, "
Tilton, Harold A.	VId	" "
Timmins, Fred	Ia	" "
Todd, Walter E.	Vb	" "
Topjian, Paul K.	VIb	" "
Torpey, Henry K. W.	IVc	Lowell, "
Trainor, Walter	VIa-VIe	" "
Trevors, Harold R.	VIa	" "
Trow, Henry J.	VIa	Ballardvale, "
Trumbull, Charles H.	IIa-VII	Lawrence, "
Trumbull, Guy M.	IIb	" "
Tucke, Edward D., Jr.	VIe	Lowell, "
Turcotte, Arthur V.	VIb	" "
Turgeon, Francis H.	VIa	" "
Tuton, Max	VIb	" "
Twohey, Edward H.	VIa	" "
Vaillancourt, Leo J.	VIa	" "
Valentine, Alexander B.	IIIa	Andover, "
Vasselin, Harold D.	VId	North Chelmsford, "
Vaughan, Aubrey W.	Ia	Lowell, "

Name	Course	Address
Vian, Armand O.	IIIb	Lowell, Mass.
Vian, Leodor G.	VIa	" "
Vincent, Oscar J.	VIa	" "
Walsh, George T.	IIIb	" "
Walton, James A.	Ia	" "
Ward, James H.	VIb	" "
Watson, Donald C.	Ia	" "
Watson, James P.	VIa	" "
Wearden, William	VIa	" "
Welcome, Harold A.	VIe	" "
Wells, Leland A.	VIb	" "
Wessells, Albert J.	VIa	" "
Wessells, Joseph F.	VIa	" "
West, Richard E.	IVb	" "
Whatmough, Harry	VIb	" "
Wheeler, Harry L.	Ia	" "
Whitham, Alfred	VIa	" "
Whitley, Walter R.	VIb	Lawrence, "
Whittier, Arthur P.	Va	Lowell, "
Wilbur, Earl R.	VIa	" "
Wilkinson, Herbert R.	IVa	Lawrence, "
Williams, Sumner H.	VIa	Lowell, "
Williams, William F.	IIIa	" "
Wilson, Cyril	Vb	Lawrence, "
Winkler, Adolph J.	VII	Lowell, "
Winship, Roger	Va	" "
Wood, Albert	Ia	" "
Wood, Samuel J.	VIa	" "
Worth, Arthur W.	VIb	" "
Wroblewski, Teofil	VIa	" "
Wylie, Archie	VIa	" "
Yeates, Percy E.	Ia	Boston, "
Zawodny, Joseph	VIa	Lowell, "
Zimmer, George D.	IVc	" "

## SUMMARY

Day Students .....	177
Evening Students .....	836
Total .....	1013
Names counted twice .....	25
Net Total .....	988



# ALPHABETICAL LIST OF GRADUATES

Name	Course	Class	Day or Evening
*Abbott, Arthur G.	Vb	1913	E
Abbott, Edward M.	II	1904	D
Abbott, George R.	II	1908	D
Abbott, Paul W.	Ia	1906	E
Ackroyd, Theodore C.	IIb	1907	E
Adams, Floyd W.	VI	1916	D
Adams, Henry S.	IIa	1903	E
Adams, Henry S.	I	1905	D
Adams, Michael E.	VI	1904	E
Adams, Tracy A.	IV	1911	D
Adams, William R.	IIa	1902	E
Allen, William J.	IVa	1913	E
Alter, Frederick A.	IVa	1914	E
Amiot, Louis H.	Va	1906	E
Anderson, Carl A.	IV	1909	E
Anderton, Harry	Va	1910	E
Anderton, Harry	Vb	1913	E
Andrews, Oliver	Ia-Va	1911	E
Arienti, Peter J.	IV	1910	D
Armitage, Ernest	Vb	1915	E
Armstrong, Elias B.	IIb	1906	E
Arnold, Warren H.	VII	1908	E
Arnold, Warren H.	IIIa	1909	E
Arundale, Henry B.	II	1907	D
Aspinwall, William	IIb	1901	E
Atkinson, Henry	IIIa	1915	E
Atkinson, Norman	Vb	1910	E
Atkinson, Reginald C.	IVa	1913	E
*Avery, Charles H.	II	1906	D
Bailey, Carl E.	Ia	1910	E
Bailey, Joseph W.	I	1899	D
Bailey, Rothwell	Va	1909	E
Bailey, Walter J.	IV	1911	D
Bain, William A.	VII	1907	E
Bake, Herbert	IIIa	1905	E
Bake, Herbert	P. G. IIIa	1906	E
Bake, Herbert	VII	1907	E
Bake, Herbert	P. G. IIIa	1909	E
Baker, William J.	IV	1916	D
Bakewell, Albert	Vb	1914	E
Baldwin, Arthur L.	IV	1900	D
Baldwin, Frederick A.	II	1904	D
Ballard, Horace W. C. S.	IV	1908	D
Ballinger, Frederick W.	IIb	1907	E
Ballinger, Raymond F.	VIIb	1915	E
Ballinger, William E.	IIb	1911	E
Balmforth, James H.	IIa	1903	E
Balmforth, James H.	IIa-b	1904	E
Balmforth, William F.	VI	1904	E
Balmforth, Martha (See French, Mrs.)			
Banks, Jonas	Va	1909	E
Banks, Jonas	Vc	1910	E
Barber, James E.	IIb	1907	E

\*Deceased

Name	Course	Class	Day or Evening
Barker, John P. .	V	1904	E
Barlow, Robert	V	1902	E
Barnes, Hammond	Ia - Va	1914	E
Barnes, Hammond	IIIa	1916	E
Barnes, Joseph	Ia	1911	E
Barr, Mrs. John E.	IIIb	1909	E
(Butler, Elizabeth M.)			
Barr, I. Walwin	I	1900	D
Barraclough, John C.	Ia	1907	E
Barrington, James L.	IV	1908	E
Barrington, John A.	IV	1904	E
Barrows, Ariston K.	Va	1915	E
Barry, Edward J.	IIIa	1903	E
Bassett, Cyrus J.	Vb	1913	E
Bastow, Henry	IIIa	1903	E
Bastow, Henry	V	1905	E
Bastow, Percy	IVa	1911	E
Bastow, Stephen W.	IV	1907	E
Baxter, Alvah J.	IIa	1903	E
Baxter, Walter	Vb	1916	E
Bayard, Pierre P.	IIIa	1907	E
Bean, Winthrop S.	IVa	1916	E
Beaulieu, William E.	IIb	1913	E
Beech, Wilfred	Ia	1912	E
Begen, Thomas W.	IIb	1907	E
Begen, Thomas W.	IIb	1908	E
Bell, Charles W.	VIa	1913	E
Bell, Frederick W.	IIa	1905	E
Bennett, Edward H.	V	1903	D
Bennett, Herbert B.	II	1913	D
Benoit, Benjamin L.	VIIb	1909	E
Benoit, William A.	Va	1907	E
Benson, George E.	Ia	1916	E
Bernard, Joseph E.	VId	1912	E
Berry, Alfred H.	VI	1908	E
*Berry, Frank M.	IIIa	1899	E
*Berry, Frank M.	V	1901	E
Berry, Percy W.	Vb	1910	E
Bigelow, Prescott F.	II	1912	D
Billings, Rupert F.	IVa	1916	E
Binns, Heaton	II-V	1899	E
Binns, Heaton	VI	1902	E
Birdsall, James E.	IIb	1915	E
Birdsall, James E.	Vb	1916	E
Birkby, Charles H.	IVa	1911	E
Bixby, Edward E.	IIIa	1914	E
Black, Alexander S.	Vb	1913	E
Blaikie, Howard M.	II	1911	D
Blais, Emile	VId	1912	E
Blake, Parker G.	VI	1914	D
Blanchette, Eugene	IIIb	1912	E
Bloom, Wilfred N.	IV	1903	D
Bodwell, Henry A.	II	1900	D
Boije, Walter F.	IIb-VII	1912	E
Bonney, Nathaniel H.	IVa	1915	E
Booth, Arthur	IIIa	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Bordeleau, Georges A.	IIIb	1915	E
Bordeleau, Georges A.	IVa	1916	E
Boucher, John L.	VI	1904	E
Bouille, Arthur L.	Vb	1907	E
Bourchard, Ethan J.	Vc	1910	E
Bourchard, Robert R.	Vb	1910	E
Bowen, Herbert E.	IIIa	1909	E
Bowie, Samuel A.	VI	1905	E
Bowles, Willis H.	Va	1916	E
Bowring, George P. B.	VI	1902	E
Boyd, George A.	I	1905	D
Boyle, John E.	Va	1914	E
Bradford, Roy H.	II	1906	D
Bradley, Raymond F.	VI	1914	D
Bradley, Richard H.	V	1901	D
Brainerd, Albert C.	Ia	1912	E
Brainerd, Arthur T.	IV	1909	D
Brainerd, Harry C.	Ia	1912	E
*Brainerd, Irving L.	Ia	1902	E
Bramley, Charles	Va	1912	E
Branch, Guy E.	IIb	1915	E
Branch, Guy E.	Vb	1916	E
Brandy, William F.	IVa	1914	E
Brandy, William F.	IIa	1915	E
Brannen, Leon V.	III-V	1907	D
Brannen, Leon V.	IIa	1907	E
Breen, James D.	Vc	1913	E
Breen, John P.	Vb	1913	E
Brickett, Chauncey J.	II	1900	D
Brickett, Raymond C.	II	1914	D
Broadbent, James H.	Vb	1908	E
Broadbent, James T.	Ia	1899	E
Broadbent, William	Vb	1908	E
Broderick, Thomas H.	VII	1912	E
Brooks, Noah	IIIa-V	1901	E
Brouder, John J.	IIIa	1906	E
Brouder, John J.	VII	1907	E
Brown, James H.	VIa	1914	E
Brown, James H.	VId	1916	E
Brown, James P.	IIIa	1905	E
Brown, James P.	P. G. IIIa	1906	E
Brown, James T.	IIIa	1908	E
Brown, Leon E.	VIa	1914	E
Brown, Rollins G.	IV	1912	D
Brown, William F.	VIIb	1911	E
Brown, William G.	IIb	1906	E
Browne, Charles D.	Ia	1912	E
Bryant, Ernest L.	VI	1905	E
Bryden, Frederick A., Jr.	IVa	1916	E
Buchan, Donald C.	II	1901	D
Buckley, Harry	IV	1908	E
Buckley, Richard A.	Vb	1909	E
Bucklitsch, Gustave J.	IIb	1907	E
Bunce, Raymond H.	Vb	1909	E
Burgess, Joseph H.	Va	1906	E

\*Deceased

Name	Course	Class	Day or Evening
Burgess, Joseph H.	Vb	1907	E
Burgess, Joseph H.	IIIa	1910	E
Burghardt, Edward S.	IIa	1902	E
Burghardt, Paul C.	IIa	1901	E
Burke, George J.	VII	1912	E
Burke, James F.	Vc	1911	E
Burke, John J.	IVa	1916	E
Burke, Thomas F.	Ia	1905	E
Burnham, Frank E.	IV	1902	D
Burnham, Joseph W.	IIIa	1906	E
Burnham, Wilmont V.	Vb	1906	E
Burns, Edward J.	IV	1905	E
Burns, James E.	IV	1905	E
Burns, Richard L.	VIb	1914	E
Burns, Robert H.	Ia	1916	E
*Burrage, Katherine C.	IIIb	1899	D
*Burrage, Katherine C.	P. G. IIIb	1900	D
Butland, Ralph A.	VII	1913	E
Butland, Ralph A.	IIb	1915	E
Butler, Benjamin O.	VI	1904	E
Butler, Elizabeth M. (See Barr, Mrs. John E.)			
Butterworth, Charles A.	Va	1907	E
Butterworth, John A.	IIb	1907	E
Buzzell, Fred S.	IIIa	1912	E
Buzzell, Fred S.	VII	1913	E
Buzzell, William O.	IIIa	1901	E
Buzzell, William O.	P. G. IIIa	1902	E
Byam, Walter S.	VI	1903	E
Bzowski, John	Vb	1916	E
Cady, Dennis J.	V	1903	E
Caldwell, James	VI	1915	E
Callahan, Patrick A.	VI	1904	E
Cameron, Elliott F.	IV	1911	D
Campbell, Albert D.	IIb	1900	E
Campbell, Archibald	IV	1908	E
Campbell, Charles F. P.	IIIb	1915	E
Campbell, Edward G.	VIc	1910	E
*Campbell, Laura E.	IIIb	1900	D
Campbell, Louise P.	IIIb	1903	D
Campbell, Orison S.	II	1903	D
Campbell, Thomas J.	IIIb	1916	E
Campling, Frank	IIb	1914	E
*Carden, Francis E.	IIb	1907	E
*Carden, Francis E.	IIb	1908	E
Carlson, Ernest B.	IIb	1907	E
Carlson, Goddard O.	VII	1912	E
Carman, William	Va	1909	E
Carney, William J.	Ia	1908	E
Caron, Cleophas	Ia	1905	E
Carpilio, John A.	VIa	1911	E
Carr, George E.	I	1905	D
Carter, Charles R.	Vb	1908	E
Carter, Robert A.	IV	1902	D
Carty, Thomas P.	Vb	1911	E
Cary, Julian C.	VI	1910	D

\*Deceased

Name	Course	Class	Day or Evening
Casavant, Elphege H.	VIId	1915	E
Cawthra, Albert B.	IIb	1900	E
Chadwick, Laurie	Vb	1915	E
Chamberlin, Frederick E.	I	1903	D
Chandler, Proctor R.	IV	1911	D
Charbonneau, Marie A.	IIIb	1916	E
Charleton, Peter	VIa	1913	E
Cheetham, James A.	VIa	1916	E
Cheetham, John James	IIIa	1901	E
Cheetham, John James	P. G. IIIa	1902	E
Cheetham, John Joseph	Ia	1904	E
Chesworth, Frank K.	Va	1909	E
Chicken, Harold M.	Ia	1916	E
Chippindale, Ernest W.	IIb	1901	E
Chisholm, Lester B.	I	1911	D
Christenson, John O.	VIb	1912	E
Christison, Hugh	IV	1910	E
Christison, Hugh	IVd	1911	E
Church, Charles R.	II-V	1906	D
Churchill, Charles W.	III	1906	D
Clapp, F. Austin	II	1904	D
Clark, John H.	IVa	1914	E
Clark, John W.	IVa	1912	E
Clark, Thomas T.	II	1910	D
Clarke, Wesley J.	VIId	1913	E
Classon, Walter H.	Vc	1913	E
Cleary, Charles J.	II	1913	D
Clogston, Raymond B.	IV	1904	D
Clough, Herschel G.	IVa	1916	E
Coan, Charles B.	IV	1912	D
Coburn, Elmer R.	IVa	1916	E
Cochrane, John	VIb	1911	E
Cochrane, John	IVa	1915	E
Cochrane, William D.	IVa	1914	E
Cockell, Frederick H.	IIIa	1909	E
Colby, Arthur D.	Ia	1900	E
Colby, James T.	VI	1916	D
Cole, Edward E.	IV	1906	D
Cole, James T.	II	1905	D
Collier, John	IIIa	1899	E
Collier, John	P. G. IIIa	1902	E
Collins, Frank	VIa	1914	E
Collins, John A.	IIa-b	1905	E
Coman, James G.	I	1907	D
Conant, Harold W.	I	1909	D
Conant, Richard G.	I	1912	D
Conklin, Jennie G.	IIIb	1905	D
Conley, Frederick A.	VI	1904	E
Conley, Leander F.	IVa	1916	E
Connors, Edward F.	VI	1904	E
Cook, Cheney E.	IIIa	1905	E
Cook, Kenneth B.	I	1913	D
Coolens, Leon G.	Vb	1916	E
Cooper, George H.	Ia	1914	E
Corr, Eben W.	Vb	1908	E
Corr, James F.	Vb	1908	E
Cosendai, Edwin F. E.	IV	1915	D



Name	Course	Class	Day or Evening
Cote, Fred J.	VIa	1913	E
Cote, George W.	VIb	1911	E
Cowdell, Herbert	V	1901	E
Cowdrey, Charles E.	V	1902	E
Cowdrey, Charles E.	Vb	1909	E
Cox, Edward J.	IIIa	1910	E
Cox, Edward J.	Va	1911	E
Cox, Edward J.	Ia	1914	E
Cox, Edward J.	Vc	1915	E
Craig, Albert W.	IV	1907	D
Craig, Clarence E.	III	1902	D
Craven, Harry	VII	1908	E
Creese, Guy T.	IV	1914	D
Cremin, Daniel J.	Ia	1902	E
Crompton, George E.	IVa	1916	E
Crompton, Henry H.	II	1899	E
Cudmore, Edward T.	VId	1913	E
Culver, Ralph F.	IV	1904	D
Cummings, Edward S.	VI	1916	D
Curran, Charles E.	II-III-V	1902	D
Currier, Herbert A.	I	1906	D
Currier, John A.	II	1901	D
Curtis, Frank M.	I	1906	D
Curtis, William L.	II	1905	D
Cushing, Lester H.	Ia	1913	E
Custer, James J. E.	V	1905	E
Cutler, Benjamin W., Jr.	III	1904	D
Cutress, Albert J.	VId	1910	E
Cuttle, James H.	II	1899	D
Dalton, Gregory S.	IV	1912	D
Dana, Clarence A.	VI	1905	E
Daskalakis, Efthimios Z.	Vb	1912	E
Daskalakis, Efthimios Z.	Vc	1913	E
Davieau, Alfred E.	VI	1916	D
Davieau, Arthur N.	VI	1913	D
Davis, Alexander D.	VI	1914	D
*Davis, Henry	IIb	1901	E
Davis, Prentice T.	Ia	1904	E
Davison, Frank L.	Vb	1909	E
Dean, Hubert R.	VIIb	1911	E
Dearborn, Roy	VI	1913	D
Dearth, Elmer E.	IV	1912	D
Deely, John A.	Vb	1910	E
Delaney, Michael J.	Vb	1911	E
Delderfield, John W.	VId	1914	E
Delmage, Edward R.	IIIa	1904	E
Dempsey, John W.	IIa	1904	E
Desaillier, Adolphe	VId	1916	E
Devine, Mary F.	IVa	1913	E
Dewey, James F.	II	1904	D
Dewey, Maurice W.	II	1911	D
Dick, Henry K.	Ia	1912	E
Dick, Hugo P.	IIIa	1905	E
Dick, Hugo P.	P. G. IIIa	1906	E
Dick, Hugo P.	IIb	1907	E
Dick, Hugo P.	Vb	1908	E

\*Deceased

Name	Course	Class	Day or Evening
Dickson, Andrew	IIa	1906	E
Dillon, James H.	III	1905	D
*Dimlick, Benjamin C.	IIIa	1905	E
*Dimlick, Benjamin C.	P. G. IIIa	1906	E
Dittman, Ralph A.	IIIa	1912	E
Dixon, Arthur	IIIa	1908	E
Dobbs, William	IIb	1907	E
Dobbs, William	IIb	1908	E
Dodge, Charles P.	IIa	1907	E
Dodge, Ernest W.	Vb	1911	E
Dodge, Frank	Ia	1906	E
Dollbaum, John A.	IIIa	1912	E
Donahey, William H.	Vb	1912	E
Donahue, Michael F.	VI	1904	E
Donahue, William E.	VIIb	1914	E
Donald, Albert E.	II	1904	D
Donnellan, Frank T.	IIa	1902	E
Donnellan, Frank T.	V	1903	E
*Donnelly, James	Ia	1900	E
Donovan, Daniel F.	IIa	1901	E
Doole, George L.	VI	1904	E
Dooley, Edward W.	VI	1904	E
Dorr, Clinton L.	VI	1914	D
Dowd, Martin F.	IIIa	1914	E
Downs, John F.	VId	1911	E
Doyle, John B.	VId	1913	E
Dubois, Ubald E.	VIIb	1915	E
Duce, Benjamin	IIIa	1906	E
Duce, Benjamin	VII	1907	E
Duckett, Fred I.	Vb	1910	E
Dudley, George E.	Ia	1902	E
Duggan, Francis P.	VI	1904	E
Dulligan, Charles E.	VIa	1909	E
Dulligan, Charles E.	IVa	1912	E
Dulligan, Lawrence F.	VIa	1910	E
Dulligan, Thomas	VIa	1911	E
Dunn, George C.	IIIa	1908	E
Dunn, George C.	IVa	1910	E
Dunn, George C.	IVb	1913	E
Dunning, Carlos W.	VIIb	1909	E
Duval, Joseph E.	II	1910	D
Dwight, John F., Jr.	II	1908	D
Early, William E.	VIIb	1915	E
Echmalian, John G.	VI	1916	D
Egan, Charles H.	IVa	1912	E
Egan, John W.	VIIb-VId	1915	E
Ehrenfried, Jacob B.	II-V	1907	D
Eichhorn, Paul A.	VIa	1915	E
Ekengren, Hilding C.	IIIb	1913	E
Eklund, Louis V.	Vb	1910	E
Elliot, Gordon B.	II	1912	D
Ellis, George W.	VII	1906	E
Elston, Fred R.	IIIa	1900	E
Emerson, Frank W.	II	1903	D
Emmons, Harry I.	IVa	1914	E

\*Deceased

Name	Course	Class	Day or Evening
Engstrom, Karl E.	VI	1912	D
Erbe, Gustave	VI	1905	E
Evans, Alfred W.	III	1903	D
Evans, William R.	III	1903	D
Evison, William A.	V	1901	E
Ewer, Nathaniel T.	IV	1901	D
Eyers, John T.	IV	1906	E
Fairbanks, Almonte H.	II	1909	D
Faneuf, George J.	VIIb	1915	E
Farmer, Chester J.	IV	1907	D
Farnsworth, Harold V.	VI	1916	D
Farr, Leonard S.	II	1908	D
Farrell, Thomas	IIa	1901	E
Fels, August B.	II	1899	D
Ferguson, Arthur F.	I	1903	D
Ferguson, Thomas	V	1902	E
Ferguson, William G.	III	1909	D
Fernley, Bert D.	VIIb-VId	1915	E
Field, Charles W.	VI	1902	E
Fielding, Fred	Vc	1910	E
Finlay, Harry F.	IV	1910	D
Fisher, Russell T.	VI	1914	D
Fiske, Starr H.	II	1909	D
Flaherty, William	Vb	1911	E
Flathers, George J.	IVa	1916	E
Fleming, Frank E.	IV	1906	D
Flemings, Lester A.	Va	1910	E
Flemings, Lester A.	Ia	1915	E
Fletcher, Roland H.	VI	1910	D
Flint, Leon G.	IIIa	1907	E
Flynn, John	VId	1910	E
Flynn, John J.	VI	1903	E
*Flynn, Patrick	Vb	1910	E
Flynn, Thomas P.	IV	1911	D
Flynn, William J.	Vb	1908	E
Fontaine, George E.	VId	1916	E
Ford, Edgar R.	IV	1911	D
Ford, Joseph L.	IIIa	1915	E
Forrest, Fred G.	IIa	1902	E
Forrest, William R.	VId	1913	E
Forsaith, Ralph A.	VI	1916	D
Fortune, David A.	IIb	1902	E
Foster, Clifford E.	II	1901	D
Foster, Sherwood L.	Ia	1905	E
Fournier, Albert A.	Ia	1911	E
Frame, William	V	1901	E
Frank, Emil M.	IIIa	1904	E
Frank, Emil M.	P. G. IIIa	1906	E
Frechette, Alphonse J.	IIb	1907	E
Freeman, George D.	VId	1913	E
Freeman, Ralph W.	IVa	1912	E
Freeman, Ralph W.	IVb	1914	E
French, Ernest J.	Ia	1905	E
French, George W., Jr.	IIIa	1915	E
French, Mrs. (Balmforth, Martha)	IIIa	1903	E

\*Deceased

Name	Course	Class	Day or Evening
French, Walter B.	VIa	1916	E
Frost, Harold B.	II	1912	D
Frothingham, Newton S.	Ia	1912	E
*Fujiyoshi, Heisayu	Ia	1910	E
*Fujiyoshi, Heisayu	Va	1911	E
Fuller, Edwin M.	Ia	1915	E
Fuller, George	I	1903	D
Fulton, John McC.	V	1906	E
Gadsby, Arthur N.	II	1913	D
Gagan, John H.	V	1901	E
Gagnon, Arthur C.	VIId	1915	E
Gahm, George L.	II	1906	D
Gainey, Francis W.	IV	1911	D
Gakidis, Alexander N.	IVa	1911	E
Gale, Harry L.	III	1910	D
Gallagher, Edward J.	Va	1916	E
Galle, Carl W.	VIIb	1916	E
Garner, William	IIIa	1903	E
Garrity, Joseph F.	VIId	1911	E
Garrity, Peter F.	Va	1915	E
Gaspar, Edith E.	IIIb	1910	E
Gaudette, Eugene O.	VIa	1916	E
Gaulin, Achille G.	VIIb	1916	E
Gaunt, Alfred C.	IIIa	1899	E
Gaunt, Alfred C.	P. G. IIIa	1902	E
Gaunt, Alfred C.	IIa	1903	E
Gaunt, Alfred C.	IIb	1904	E
Gaunt, Ernest H.	IIIa	1909	E
Gauthier, William	Vb	1910	E
Gay, Earle B.	Ia	1905	E
Gay, Olin D.	II	1908	D
Geaney, James H.	VII	1915	E
Gearin, John W.	VIIb	1915	E
Gerrish, Henry K.	III	1916	D
Gerrish, Walter	III	1903	D
Gerry, Churchill	VIa	1915	E
Gerry, Churchill	IVa	1916	E
Gesing, Roland M.	VII	1916	E
Gibbons, James J.	VIa	1914	E
Giffin, Charles H.	IIIa	1913	E
Giffin, Charles H.	VII	1914	E
Giffin, George R.	IIIa	1913	E
Giffin, George R.	VII	1914	E
Gile, Harold E.	IVa	1913	E
Gile, Harold E.	IVb	1916	E
Gilinson, Philip J.	VIa	1909	E
Gill, Gardner G.	IVa	1914	E
Gilley, Frederic S.	IIIa	1916	E
Gillispie, James E.	VII	1907	E
Gillon, Sarah A.	IIIb	1906	D
Gilman, Edward T.	VIa	1914	E
Glennon, Edward M.	IVa	1911	E
Goddard, Harold W.	VIIb	1915	E
Goddard, Walter L.	VII	1915	E
Goldberg, George	VI	1910	D

\*Deceased

Name	Course	Class	Day or Evening
Good, Henry	Ia	1902	E
Goodchild, George	Ia	1903	E
Goodchild, George	VI	1905	E
Goodhue, Amy H. (See Harrison, Mrs.)			
Goodwin, Ross	Vb	1911	E
Gookin, Alice L. (See Murphy, Mrs.)			
Gordon, Herbert E.	IIIa	1909	E
Gordon, Loyd H.	VIa	1913	E
Grant, Archibald	IIb	1901	E
Graves, John F.	VIb	1912	E
Gray, Finley M.	VI	1903	E
Greenhalge, James	Vc	1908	E
Greenwood, Ralph F.	VII	1912	E
Gregson, Robert B.	Va	1906	E
Gregson, Robert B.	Ia-Vc	1907	E
Groucke, Michael	IIb	1901	E
Guenard, Julia A.	IIIb	1916	E
Gunning, Alfred J.	VII	1916	E
Gunther, George A.	IVa	1916	E
Gustafson, Alfred L.	IVa	1911	E
Gustafson, Alfred L.	VIa	1915	E
Gyzander, Arne K.	IV	1909	D
Haartz, John C.	VII	1907	E
Haas, Ignatius	Ia	1907	E
Hadley, Walter E.	IV	1908	D
Haigh, Walter	IIIa	1902	E
Haigh, William	Vb	1906	E
Haithwaite, Albert	Ia	1914	E
Haithwaite, George Q. R.	Va	1916	E
Haldane, Andrew	Va	1914	E
Hale, Frank O.	Ia	1915	E
Hall, Richard G.	Ia	1915	E
Hall, Sydney H.	VIIb	1914	E
Hallbauer, William R.	Vb	1908	E
Halloran, Joseph M.	IVa	1915	E
Halsell, Elam R.	I-V	1904	D
Hamblett, Harry A.	Ia	1907	E
Hammond, John N.	Vb	1914	E
Handley, John M.	Vb	1911	E
Hanglin, Albert J.	IV	1907	E
Hanglin, William E.	Vb	1907	E
Hanley, Edward T.	IIb	1915	E
Hannagan, Edward F.	IIb	1913	E
Hannagan, Edward F.	VII	1914	E
Hansen, Hans M.	VId	1912	E
Hanslip, Charles W.	Vb	1911	E
Hanson, Edward	IIIa	1908	E
Hanson, Edward	P. G. IIIa	1909	E
Hanson, Edward	Ia	1913	E
Hanson, Winfield S.	IVa	1914	E
Harder, Elmer E.	VI	1905	E
Hardman, David B.	IV	1908	E
Hardy, Philip L.	VI	1910	D
Harmon, Charles F.	I	1899	D
Harrington, Thomas	IV	1915	D
Harris, Charles E.	I	1905	D
Harris, George S.	I	1902	D



Name	Course	Class	Day or Evening
Harris, Louis	VII	1908	E
Harrison, Mrs. (Goodhue, Amy)	IIIb	1900	D
Harrison, Mrs. (Goodhue, Amy) P.G.	IIIb	1901	D
Hartshorn, George T.	VII	1912	E
Hartwell, Henry E.	VI	1906	E
Hartwell, Marcus H.	Ia-Va	1911	E
Hartwig, Albert E.	Vb	1914	E
Hashmatian, Harry	IIIb	1915	E
Haskell, Spencer H.	II	1907	D
Haskell, Walter F.	IV	1902	D
Hassett, Paul J.	IV	1912	D
Hathorn, George W.	IV	1907	D
Haven, George W.	IIIa	1905	E
Haworth, Joseph	VI	1902	E
Hay, Ernest C.	II	1911	D
Hayes, Michael C.	IIa	1909	E
Hayward, Harry J.	Ia	1916	E
Healy, Andrew J.	VId	1915	E
*Heaton, Forster G.	IV	1911	E
Hebert, Charles L. J.	IV	1907	E
Heeley, George E.	Va	1916	E
Hempel, Frank	V	1904	E
Henderson, George R.	IVa	1915	E
Hendricks, Thomas A.	VIIb	1916	E
Hendrickson, Walter A.	II	1911	D
Hennessey, Ambrose M.	VII	1908	E
Hennigan, Arthur J.	II	1906	D
Henzie, John J.	IIIa	1914	E
Herbst, Gustav F.	Va	1914	E
Hering, Paul C.	IIIa	1910	E
Herrick, William E.	VII	1911	E
Herron, Alexander T.	Ia	1913	E
Herron, Alexander T.	IVa	1914	E
Hibbert, George E.	Va	1910	E
Hibbert, George E.	Vc	1911	E
Hibbert, George E.	Vb	1912	E
Higginbottom, Harold J.	IVa	1915	E
Higginbottom, Joseph J.	VId	1916	E
Higgins, Alfred	IIIa	1913	E
Higgins, James A.	IIa	1903	E
Higgins, James A.	IIa-b	1904	E
Higginson, Joseph H.	IIIa	1912	E
Hildreth, Harold W.	II	1907	D
Hill, Bruce	IIIa	1914	E
Hill, Daniel	IIb	1901	E
Hill, Ellsworth O. C.	IIb	1910	E
Hill, Harold	Ia	1908	E
Hill, Harold	Va	1909	E
Hill, Paul	VII	1914	E
Hilliard, William B.	VIIa	1910	E
Hillier, Arthur P.	IIb	1909	E
Hintze, Thomas F.	I	1906	D
Hird, Arthur W.	Ia	1910	E
Hird, James A.	IVa	1910	E
Hitchcock, Thomas B.	Ia-IIa-IIIa	1901	E
Hitchen, Harry S.	Vb	1907	E

\*Deceased

Name	Course	Class	Day or Evening
Hitchen, Thomas G.	Vb	1907	E
Hodge, William	VIa	1911	E
Hodgkins, Albert A.	VII	1909	E
Hodgkins, Albert A.	IIIa	1910	E
Hodgkins, Richard D.	Ia	1916	E
Hoellrich, Martin J.	Vb	1908	E
Hoellrich, Martin J.	Vc	1910	E
Hoelzel, Louis C.	VIa	1913	E
Hoessler, Carl, Jr.	IIIa	1906	E
Hogan, James A.	V	1902	E
Holden, Francis C.	IV	1909	D
Holgate, Benjamin	III	1902	D
Holgate, Benjamin	V	1903	D
Holgate, Charles H.	IIa	1901	E
Holland, Walter F.	IIIa	1912	E
Hollings, James L.	I	1905	D
Holmes, Otis M.	VI	1913	D
Holt, Gavin O.	IVa	1910	E
Holt, Harry C.	VIa	1909	E
Hood, Leslie N.	IV	1912	D
Hook, Russell W.	IV	1905	D
Horman, Charles P.	IIIa	1914	E
Horsfall, George G.	II-III-V	1904	D
Horton, Chester T.	VI	1914	D
Houston, William I.	IIIa	1909	E
Houston, William I.	Vb	1910	E
Howard, John	V	1900	E
Howard, John	IIIa	1903	E
Howard, John	IIa	1906	E
Howard, John	VII	1907	E
Howard, Thomas	V	1905	E
Howe, Charles W., Jr.	VIa	1914	E
Howe, Woodbury K.	I	1910	D
Howell, Edward A.	Va	1909	E
Howker, John	Ia	1913	E
Howker, John	Va	1914	E
Hoyle, Edward	IIb	1902	E
Hoyle, Joseph	IIb	1904	E
Hoyt, Charles W. H.	IV	1907	D
Hubbard, Ralph K.	IV	1911	D
Huising, Geronimo H.	I	1908	D
Hunt, Chester L.	III	1905	D
Hunt, Herbert R.	VI	1905	E
Hunter, Ralph	IIIa	1901	E
Hunter, Ralph	V	1903	E
Hunton, John H.	VII	1910	E
Hunton, John H.	II	1911	D
Hunton, Lewis G.	IV	1905	E
Hurtado, Leopoldo, Jr.	Vc	1910	E
Hurtado, Leopoldo, Jr.	VI	1910	D
Huse, Charles H.	VIb	1914	E
Hutchings, James C.	VII	1912	E
Hutton, Clarence	V	1900	E
Hutton, Clarence	III	1903	D
Hutton, Harold	V	1906	E
Hutton, John M.	Vb	1906	E

Name	Course	Class	Day or Evening
Hutton, Thomas V.	Vb	1910	E
Ignatius, Pentti	Va	1907	E
Inberg, Magnus	Ia	1906	E
Ingham, Benjamin W.	Ia	1908	E
Ingle, Ernest	Va	1916	E
Innes, Andrew K.	Vb	1913	E
Jackson, Charles F.	Vib	1915	E
Jackson, Frank	Vib	1910	E
Jackson, Frank	VId	1912	E
Jackson, Walter J.	IIa	1913	E
Jackson, Walter J.	Vb	1914	E
Jackson, Walter J.	IIIa-VII	1915	E
Jarvis, Charles	Vb	1913	E
Jasper, Grant	Vc	1912	E
Jean, Adhemard C.	VIa	1910	E
Jeanotte, Arthur	VI	1904	E
Jelleme, William O.	I	1910	D
*Jenckes, Leland A.	VI	1908	D
Jennings, James J.	IIIa	1903	E
Jepson, Harry	Vb	1907	E
Johnson, Arthur K.	IV	1913	D
Johnson, Arthur O.	IVa	1914	E
Johnson, Ernest A.	IIa-b	1902	E
Johnson, Ernest A.	V	1906	E
Johnson, Samuel L.	V	1903	E
Jones, Everett A.	III	1905	D
Jones, Herbert	Ia	1913	E
Jones, William J.	IIb	1900	E
Jones, William J.	IIa	1901	E
Jordan, Frederic W.	IV	1910	E
Jorde, Linville T.	VIc	1910	E
Joyce, John	Vc	1909	E
Jubenville, Joseph D.	VId	1916	E
Jury, Alfred E.	IV	1904	D
Kaler, Harold F.	Vib	1909	E
Kannheiser, William A.	Vb	1915	E
Kay, Harry P.	II	1909	D
Keisling, William	Vb	1916	E
Keleher, John J.	IIb	1903	E
Keleher, John L.	VId	1915	E
Kellett, Irvine	II	1899	E
Kelley, Bernard J., Jr.	VIc	1909	E
Kelly, Michael H.	Ia	1902	E
Kelly, Michael H.	IIIa	1907	E
Kelly, Thomas F.	IVa	1915	E
Kennedy, William E.	VIa	1911	E
*Kent, Arthur	Vib	1912	E
*Kent, Arthur	VId	1914	E
Kent, Clarence L.	III-V	1906	D
Kent, Ernest J.	IIb	1902	E
Kenworthy, Joseph	Ia	1905	E
Kenyon, Herbert	Ia	1915	E
Keough, Wesley L.	II	1910	D
Kerrigan, Arthur J.	VIa	1912	E
Kershaw, Benn	Va	1909	E
Kershaw, Benn	Vc	1910	E

\*Deceased

Name	Course	Class	Day or Evening
Kershaw, Samuel S.	IIb	1910	E
Kershaw, Samuel S.	Vb	1913	E
Kershaw, William E.	V	1904	E
Kidd, Thomas E.	IV	1906	E
Killerby, Walter	IIb	1901	E
Kimball, Irving D.	VI	1905	E
Kingsbury, Percy F.	IV	1901	D
Kirkpatrick, Lloyd A.	Ia	1914	E
Kirsch, Alfred O.	Vb	1907	E
Knowland, Daniel P.	IV	1907	D
Knowles, Frank E.	Ia	1903	E
Krause, George R.	VII	1910	E
Kyle, George S.	Ia	1915	E
Lachance, Melina	IIIb	1911	E
Laffert, August W.	IIIa	1906	E
Laffert, August W.	VII	1907	E
Lagerblad, Jarl	VII	1908	E
LaJeunesse, Joseph A.	IVa	1910	E
LaJeunesse, Joseph A.	IVc	1913	E
Lake, William F.	IIIa	1907	E
Lake, William F.	P. G. IIIa	1908	E
Lakeman, Fannie S.	IIIb	1900	D
Lamb, Arthur F.	II	1910	D
Lambert, Harry	IIb	1912	E
Lambert, Harry	Vb	1915	E
Lambert, Seth	IIb	1913	E
Lamont, Robert L.	II	1912	D
Lamont, Walter M.	IIb	1902	E
Lamprey, Leslie B.	IV	1916	D
Lamson, George F.	I	1900	D
Lamson, George F.	VI	1905	E
Lane, John W.	I	1906	D
Lane, John W.	I-V	1907	D
Lane, Lewis D.	VIc	1916	E
Lane, Michael J.	VII	1915	E
Lane, Oliver F.	IV	1915	D
Lang, William A.	Vc	1913	E
Langevin, Felix D.	VI	1904	E
Langevin, George F.	VIb	1915	E
Lapierre, Alderic S.	IIIa	1912	E
LaPorte, Elsie	IIIb	1916	E
LaPorte, Phillip J.	IVa	1912	E
LaPrise, Frank E.	IVa	1914	E
Larue, Isabella G.	IIIb	1916	E
Laughlin, James K.	III	1909	D
Laurin, Erick T. L.	VIIb	1914	E
Law, Alfred	IIb	1901	E
Lawliss, Augustine J.	V	1902	E
Lawrence, Abbott	VIc	1916	E
Lawrence, Charles	Ia	1903	E
Leach, John P.	I-V	1900	D
Leach, Joseph W.	V	1903	E
Learned, Frank E.	Va	1913	E
Learned, Frank E.	Vc	1914	E
Leather, Seward S.	IIb	1915	E
Leaver, Harold E.	IIb	1914	E
Leaver, Harry	IVa	1916	E

Name	Course	Class	Day or Evening
Leaver, Raymond J.	Vib	1913	E
Leck, Arthur J.	VII	1910	E
Ledoux, Blanche H.	IIIb	1910	E
Lee, Charles	Ia	1902	E
Lee, William H.	V	1905	D
Lees, William H.	IIIa	1915	E
Leitch, Harold W.	IV	1914	D
Leith, Edwin E.	IIIa	1902	E
Leith, Joseph E.	Vb	1912	E
Leith, Joseph E.	IIIa	1914	E
Leland, Raymond C.	Vib	1915	E
Lemire, Arthur	Ia	1910	E
Lemire, Arthur	Va	1911	E
Leonard, Charles W.	VII	1913	E
Leonard, Charles W.	IVb	1915	E
Levi, Alfred S.	IV	1909	D
Lewis, Charles S.	VIa	1914	E
Lewis, LeRoy C.	IV	1908	D
Lewis, Walter S.	IV	1905	D
Libby, C. Robert	VI	1902	E
Lightbown, William H.	Vb	1915	E
Lillis, Marvin H.	IV	1914	D
Linberg, Joseph F.	IVa	1911	E
Lincourt, Hector L.	VI	1903	E
Lincourt, Henry E.	Vib	1909	E
Linehan, Thomas W.	VII	1914	E
Linkletter, Alfred C.	VI	1905	E
Lister, Henry	VII	1915	E
Lockberg, John L.	VIId	1912	E
Logan, George H. S.	IV	1911	E
Logan, Robert F.	Va	1915	E
Looby, George A.	Vc	1914	E
Lord, Harry D.	IIIa	1904	E
Lord, Wilfred	IIIa	1901	E
Lord, Wilfred	IIb	1903	E
Lord, Wilfred	IIa	1904	E
Lovell, Charles E.	VI	1905	E
Lowe, Harry F.	Va	1913	E
Lowe, Harry F.	Vb	1914	E
Lowe, John C.	IIb	1912	E
Lowe, John C.	Vb	1916	E
Luce, Harry A.	VII	1914	E
Luce, Harry A.	IIIa	1915	E
Lucey, Edmund A.	II	1904	D
Lunan, Karl S.	VIa	1916	E
Lund, Stanley W.	Vlb	1916	E
Lynch, John	VIId	1916	E
*McAlister, John W.	V	1899	E
McAuliffe, Patrick D.	Vib	1910	E
McBride, Robert G.	IIa	1904	E
McCann, Martin	Vb	1912	E
McCarthy, Joseph F.	IIIa	1906	E
McCartin, Marietta L.	IIIa	1915	E
McClure, Charles G.	Vib	1909	E
McCool, Frank L.	IV	1910	D
McDermott, James	VII	1916	E

\*Deceased



Name	Course	Class	Day or Evening
Macdonald, Chester W.	VIa	1912	E
MacDonald, John F.	Va	1914	E
McDonald, William A.	VIb	1913	E
McDonnell, William H.	I-V	1906	D
McElroy, Claude R.	VID	1914	E
McElroy, Samuel H.	Vb	1910	E
McGaunn, Charles	VID	1915	E
McGaunn, Theodore	VID	1915	E
McGee, David	IVa	1915	E
McGill, William E.	VII	1908	E
*McGovern, James	VII	1908	E
McGowan, Annie C.	IIIb	1913	E
McGowan, Frank R.	VI	1915	D
McGrath, William F.	VII	1915	E
McGurn, James P.	VID	1913	E
Mack, Clarence P.	IIIa	1914	E
Mackay, Stewart	III	1907	D
McKenna, Hugh F.	IV	1905	D
McKenna, Jeremiah J.	Vb	1908	E
McKittrick, Percy A.	VIa	1916	E
McLaughlin, Peter J.	Ia	1906	E
McLay, John	Vb	1906	E
McLay, John	IIb	1909	E
McManus, Hugh	V	1905	E
McNamara, Thomas	Vb	1911	E
Macnee, Forrest F.	IIb	1914	E
MacPherson, Wallace A.	III	1904	D
McQuade, Hugh B.	V	1901	E
Mabbett, Albert L.	IIIa	1910	E
Madden, Peter	Va	1909	E
Maden, Harry	IIb	1900	E
Maguire, Andrew F.	Vb	1913	E
Maguire, James H.	VI	1905	E
Maguire, James H.	Ia	1906	E
Maguire, James H.	IIb	1915	E
Mahoney, Dennis J.	Vb	1909	E
Mahoney, Joseph	Vc	1914	E
Mailey, Howard T.	II	1908	D
Maker, Isaac A.	Ia	1908	E
Manning, Frederick D.	IV	1910	D
Manning, James B.	IVa	1911	E
Manning, James B.	IVb	1913	E
Marjerison, Isaiah D.	II	1899	E
Marjerison, T. Sydney	IIIa	1907	E
Marjerison, T. Sidney	P. G. IIIa	1908	E
Marinel, Walter N.	I	1901	D
Marsden, Fred	IIIa	1915	E
Marsden, Phillips B.	IVa	1911	E
Marshall, Fred K. R.	VI	1908	E
Martin, Harry W.	IV	1911	D
*Martin, John C., Jr.	IIa-b	1905	E
Martin, Willard E.	IIIa	1907	E
Mason, Archibald L.	VI	1909	D
Mason, Frederick A.	Ia	1903	E
Mather, Harold T.	VI	1913	D
Maxey, Leo M.	VIc	1910	E

\*Deceased

Name	Course	Class	Day or Evening
Maynard, Wilfred B.	VII	1913	E
Meadows, William R.	I	1904	D
Mears, Lewis N.	IVa	1914	E
Meek, Lotta (See Parker, Mrs. Herbert L.)			
Merchant, Edith C.	IIIb	1900	D
Merrill, Allan B.	IV	1911	D
Merrill, Edwin C.	VI	1904	E
Merrill, Lester C.	VIb	1915	E
Merriman, Earl C.	II	1907	D
Messiah, Hiram G.	Vb	1910	E
Metcalf, Walter B.	I Ib	1913	E
Michael, Joseph C.	Vb	1912	E
Micheltmore, Harry	IIIa	1906	E
Micheltmore, Harry	VII	1907	E
Midwood, Arnold J.	IV	1905	D
Miller, Emil H.	V	1904	E
Miller, Ernest P., Jr.	Ib	1913	E
Milot, Aram A.	Vb	1914	E
Milot, Joseph E.	VIc	1911	E
Minge, Jackson C.	I-V	1901	D
Minge, Jackson C.	IIIa	1901	E
*Moir, Alexander L.	IIIa	1899	E
*Moir, Alexander L.	P. G. IIIa	1903	E
Molloy, Andrew	V	1902	E
Molloy, Andrew	IIIa	1905	E
Molloy, Andrew	P. G. IIIa	1906	E
Molloy, Andrew	P. G. IIIa	1909	E
Molloy, Francis H.	II	1916	D
Monahan, Patrick H.	VI d	1913	E
Moore, Everett B.	I	1905	D
Moore, Karl R.	IV	1911	D
Moorehouse, Thomas	VI	1904	E
Moorhouse, William R.	IV	1901	D
Morrill, Howard A.	VI	1916	D
Morris, Frank A.	V	1901	E
Morrison, Fred C.	I	1903	D
*Mortenson, Carl W.	IIIa	1903	E
*Mortenson, Carl W.	IIa	1908	E
Morton, Albert N.	I Ib	1906	E
Mosher, Chester L.	VIb	1916	E
Moss, Joseph	Ia	1915	E
Mountain, Everett R.	Ia	1915	E
*Mozley, Arthur	VI	1903	E
Muldoon, Joseph M.	VIb	1912	E
Mullen, Arthur T.	II	1909	D
Mullen, Frank J.	VI d	1914	E
Munroe, Sydney P.	I	1912	D
Murphy, Cornelius D.	IIa	1906	E
Murphy, Howard H.	I Ib	1911	E
Murphy, John	VIb	1916	E
Murphy, John H.	VI	1904	E
Murphy, Leo T.	Vc	1913	E
Murphy, Mrs. (Cookin', Alice L.)	IIIb	1910	E
Murray, James	IV	1913	D
Murray, James A.	II	1910	D
Musard, Albert E., Jr.	Vc	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Musard, Henry A.	Vc	1913	E
Myers, James W.	IIIa-IV	1903	E
Myers, James W.	VII	1907	E
Najar, G. Geo.	IV	1903	D
*Naylor, Charles	IVa	1912	E
Neel, Andrew, Jr.	IVa	1915	E
Nelson, Charles E.	IIb	1907	E
Nelson, Ernest H.	IIb	1900	E
Nelson, Ernest H.	IIa	1901	E
Nelson, Ernest H.	IIIa	1906	E
Nelson, Ernest H.	Ia	1909	E
Nelson, Ernest H.	Vc	1910	E
Nelson, Ernest H.	Ib	1913	E
Nelson, Gustave A.	Vb	1910	E
Nelson, James A.	Ia	1911	E
Nelson, James A.	Va	1916	E
Nelson, Sigfred W.	VIId	1911	E
Newall, J. Douglas	IV	1909	D
Newall, Preston	Ia	1911	E
Newcomb, Guy H.	IV	1906	D
Newsholme, Charles E.	VIb	1911	E
Neyman, Julius E.	IV	1915	D
Nichol, Samuel J.	IVa	1911	E
Nichol, Samuel J.	IVb	1914	E
Nichols, Clarence W.	Vb	1910	E
Nichols, Fernald H.	VIb	1914	E
Nichols, Nathan A.	VIb	1911	E
Nichols, Raymond E.	VI	1910	D
Nicholson, Richard	IIb	1903	E
Nicoll, James K.	VIId	1915	E
Nicoll, John	IVa	1910	E
Nicoll, John	IVb	1913	E
Niven, Robert S.	VI	1912	D
Noble, John T.	V	1899	E
Noble, John T.	IIIa	1901	E
Noonan, Denis T.	IIIa	1903	E
Noring, Ernest G.	VII	1916	E
Notman, Frederick W.	Ia	1904	E
Nugent, Thomas A.	II-V	1899	E
Nugent, Thomas A.	VI	1902	E
Nutter, James R.	VI	1908	E
O'Brien, David A.	IV	1906	E
O'Brien, Frederick A.	VIb	1914	E
O'Brien, Michael F.	IIb	1907	E
O'Brien, Philip F.	II	1915	D
O'Brien, Raymond L.	IVa	1915	E
Obst, Ehrich	VIId	1915	E
O'Connell, Clarence E.	IV	1911	D
O'Connor, Frank H.	Ia	1915	E
O'Donnell, John D.	I-V	1904	D
Ogley, Samuel A.	IIb	1900	E
O'Hara, William F.	IV	1904	D
O'Neill, Peter F.	IV	1905	E
Orrell, Ernest R.	VIId	1913	E
Orrell, Frank L.	VIb	1909	E

\*Deceased

Name	Course	Class	Day or Evening
Orrell, Frank L.	IIb	1912	E
Orrell, Frank L.	Vb	1913	E
*Osbeck, William J.	IIIa	1908	E
Osgood, Charles F.	Ia	1900	E
Osgood, Charles F.	VI	1902	E
Overend, John	V	1905	E
Palm, Carl H.	VIa	1912	E
Palmer, G. Buel	IIIa	1903	E
Palmer, G. Buel	Vb	1909	E
Paquin, Joseph	VIa	1909	E
Paquin, Joseph	VIb	1910	E
Parker, B. Moore	I	1901	D
Parker, Everett N.	I	1905	D
Parker, Harry C.	V	1900	D
Parker, John G.	Va	1914	E
Parker, Mrs. Herbert L.	IIIb	1907	D
Parkin, Prescott R.	Vb	1911	E
Parkis, William L.	I	1909	D
Parsons, Joseph G.	IIIa	1909	E
Patrick, Alexander	IIIa	1904	E
Patterson, Alfred H.	IIIa	1908	E
Peabody, Roger M.	II	1916	D
Pearson, Alfred H.	IV	1911	D
Pearson, Fred	VIa	1909	E
Pease, Chester C.	I	1909	D
Peck, Carroll W.	IV	1913	D
Pedler, William A.	Ia	1906	E
Pedler, William A.	IVa	1911	E
Peel, Hudson	IIb	1901	E
Peel, Tom	IVa	1916	E
Pendlebury, David	Ia	1915	E
Pendlebury, David	Ia	1916	E
Pendlebury, Harold	VIa	1915	E
Pensel, George R.	IV	1913	D
Perkins, John E.	III	1900	D
Perkins, J. Dean	III	1908	D
Perkins, Thomas, Jr.	Ia	1908	E
Perron, Francis J.	Vb	1911	E
Perron, Francis J.	IIIa	1916	E
Perry, Clarence R.	IIb	1911	E
Petterson, Birger	VIa	1910	E
Petty, George E.	I-V	1903	D
Phelps, Mary I.	IIIb	1910	E
Picken, William T.	IIIa	1908	E
Pickles, Wilfrid	Va	1914	E
Pierce, Duncan H.	VII	1914	E
Pierce, Gordon J.	Vb	1914	E
Pihl, Christian E.	VI	1906	E
Pihl, Ingrid I.	IIIb	1912	E
Pihl, Mansfred M.	VIb	1914	E
Pike, Daniel P.	IVa	1915	E
Pillsbury, Ray C.	I	1913	D
Pinkham, Banford O.	VIa	1914	E
Pittendreigh, John M.	Ia	1906	E
Playdon, Louis C.	Ia	1914	E

\*Deceased

Name	Course	Class	Day or Evening
Playdon, Roy A.	I Ib	1916	E
Plumer, Paul T.	Vb	1908	E
Plummer, Elliott B.	IV	1913	D
Poore, Herbert E.	IVa	1915	E
Porter, George K., Jr.	IIIa	1907	E
Porter, George K., Jr.	P. G. IIIa	1908	E
Porter, William E.	VIa	1915	E
Potter, Carl H.	I	1909	D
Potter, Richard W.	V	1902	E
Pottinger, James G.	II	1912	D
Pradel, Mrs. Alois J. (Walker, Anna)	IIIb	1903	D
Preble, George A.	IIIa	1908	E
Preble, George A.	Va	1912	E
Preble, George A.	Vb-c	1913	E
Preble, George A.	IVa	1915	E
Prescott, Walker F.	IV	1909	D
Prescott, William B.	Va	1912	E
Prince, Sylvanus C.	VI	1908	D
Proctor, Braman	IV	1908	D
Putnam, George I.	IV	1916	D
Putnam, Leverett N.	IV	1910	D
Putnam, Philip C.	IV	1913	D
Quance, Alfred	IVa	1916	E
Quinn, James H.	VII	1913	E
Racicot, Marie E.	IIIb	1911	E
Ramsdell, Theodore E.	I	1902	D
Randall, William O.	I Ib	1913	E
*Rasche, William A.	III	1903	D
Raymond, Charles A.	IV	1907	D
Read, Paul A.	VII	1907	E
Read, Paul A.	Va	1909	E
Reardon, Timothy H.	VI	1906	E
Redman, Henry S.	IIIa	1904	E
Redman, Henry S.	V	1905	E
Redman, Henry S.	Ia	1907	E
Redman, Henry S.	IV	1910	E
Redman, Henry S.	VIa	1912	E
Redman, Henry S.	Ib	1913	E
Redpath, Robert H.	VII	1913	E
Redpath, Robert H.	Vb	1914	E
Reed, Foster C. K.	VI	1904	E
Reed, Norman B.	I	1910	D
Regan, Joseph L.	VIb	1915	E
Reynolds, Eugene A.	VI	1906	E
Reynolds, Fred B.	II	1908	D
Reynolds, Hiram L.	IIIa	1901	E
Reynolds, Isabel H.	III-V	1903	D
Reynolds, Isabel H.	P. G. III-V	1906	D
Reynolds, James J.	Vc	1913	E
Rhodes, Joseph E.	V	1904	E
Rhodes, William H.	IIIa	1916	E
Rich, Edward	IV	1915	D
Rich, Everett B.	III	1911	D
Richards, Francis G.	IIa	1906	E
Richards, Raymond A.	IIIb	1915	E
Richardson, George O.	IV	1916	D



Name	Course	Class	Day or Evening
Richardson, Richardson P.	I	1913	D
Riley, Edward T.	IIIa	1912	E
*Ritter, Alfred E.	IIb	1907	E
Robbins, John	IIb	1907	E
Roberson, Pat H.	I	1905	D
Roberts, Carrie I.	IIIb	1905	D
Roberts, Joseph	Vb	1915	E
Robinson, Ernest W.	IV	1908	D
Robinson, James E.	VII	1911	E
Robinson, Ruddach P.	VII	1911	E
Robinson, Thomas	Ia	1909	E
Robinson, Thomas	Vc	1910	E
Robinson, William C.	III-V	1903	D
Robson, Frederick W. C.	IV	1910	D
Roche, Raymond V.	IV	1912	D
Rockwell, Henry D.	IIa	1903	E
Rockwell, Samuel F.	IIa	1902	E
Rodger, Thomas C.	IVa	1915	E
*Roesler, Alfred	IIIa	1914	E
Rogers, John F.	Ia	1911	E
Rollins, Henry E.	VII	1912	E
Rollins, Sidney R.	IIb	1913	E
Rooney, George W.	Ia	1904	E
Root, Francis X., Jr.	IIIa	1910	E
Rostron, Robert	Va	1916	E
Rouine, Francis E.	VIIb	1914	E
*Rowell, Herman C.	Ia-IIb	1900	E
Rowlands, Harold	Va	1911	E
Royds, James	Ia	1912	E
Rundlett, Arnold D.	VI	1912	D
Rushworth, Walter	VI	1906	E
Ryan, Edward P.	Ia	1909	E
Saalfrank, Joseph C.	IIIa	1908	E
Sanborn, Harold S.	VII	1915	E
Sanborn, Ralph L.	VI	1916	D
Saunders, Edward B.	IIIa	1901	E
Saunders, Harold F.	IV	1909	D
Saunders, Louis P.	Vb	1916	E
Savage, Charles F.	IVa	1912	E
Sawyer, Joseph W.	IV	1915	D
Scally, Edward	VI	1908	E
Scanlon, Edward J.	IIb	1901	E
Schermerhorn, George E.	Ia	1902	E
Schermerhorn, George E.	Va	1908	E
Schmidt, Hartman F.	IIb - VII	1914	E
Schmidt, Hartman F.	IIa	1915	E
Schofield, John S.	IIIa	1903	E
Schoon, Fenton	IIb	1903	E
Schubert, George J.	V	1906	E
Schubert, George J.	IIIa	1909	E
Schuerfeld, Harry W.	IIIa	1909	E
Schuster, William F.	VII	1908	E
Scully, Patrick F.	IIIa-VII	1915	E
Scully, Patrick F.	Vb	1916	E
Seddon, N. Graham	IIIa	1908	E

\*Deceased

Name	Course	Class	Day or Evening
Semple, Alexander	IIIa	1908	E
Senior, George	Va	1906	E
Senior, George	Ia-Vc	1907	E
Shaber, Hyman J.	VI	1916	D
Shackleton, John H.	IV	1908	E
Shackleton, John H.	Ia	1910	E
Shaffer, William A.	VId	1911	E
Shannon, Philip J.	V	1901	E
Sharpe, John R.	VI	1906	E
Shaw, Albert	VIb	1916	E
Shaw, James	V	1904	E
Shaw, William	VIa	1913	E
Shea, Francis J.	II	1912	D
Shearer, David D.	VII	1912	E
Shearer, David D.	Vb	1913	E
Shearer, William A.	Vb	1915	E
Shedd, Howard P.	IVb	1915	E
Sheppard, Byron H.	VI	1906	E
Shields, John J.	Va	1911	E
Sidebottom, Leon W.	IV	1911	D
Silcox, Arthur E.	Ia	1900	E
Silk, Frederick C. M.	IV	1905	E
Silk, Patrick E.	VII	1906	E
Simmers, Arthur A.	VIb	1915	E
Simola, Emil J.	IIa-b	1905	E
Simoneau, Verner W.	VI	1908	E
Skidmore, Russell P.	VIb	1912	E
Skinner, Clarence W.	IIIa	1905	E
Skinner, Clarence W.	P. G. IIIa	1906	E
Skinner, Clarence W.	VII	1907	E
Sleeper, Robert R.	IV	1900	D
Sleeper, Robert R.	VII	1913	E
Smart, George A.	Va	1915	E
Smart, George A.	Vc	1916	E
*Smith, Albert A.	I	1899	D
Smith, Arthur	IIIa	1905	E
Smith, Arthur	P. G. IIIa	1906	E
Smith, Arthur	Va	1906	E
Smith, Arthur	Vc	1907	E
Smith, Arthur	P. G. IIIa	1909	E
Smith, Doane W.	II	1910	D
Smith, Edward	Ia	1904	E
Smith, Edwin H.	IVa	1916	E
Smith, Ernest B.	Vb	1907	E
*Smith, Fred	IIb	1901	E
Smith, George A.	IIIa	1905	E
Smith, George A.	P. G. IIIa	1906	E
Smith, George A.	VII	1909	E
Smith, Gordon N.	IVa	1915	E
Smith, James	Vb	1907	E
Smith, John W.	IIb	1904	E
Smith, Leonard	VIa	1914	E
Smith, Mae V.	IIIb	1915	E
Smith, Miles H.	IIb	1915	E
Smith, Miles H.	Vb	1916	E
Smith, Percy H.	Vb	1907	E

\*Deceased

Name	Course	Class	Day or Evening
Smith, Ralston F.	I	1904	D
Smith, Stephen E.	I	1900	D
Smith, Theophilus G., Jr.	IV	1910	D
Smith, William E.	IIIa	1905	E
Smith, William E.	P. G. IIIa	1906	E
Smith, William E.	VII	1907	E
Smith, William E.	P. G. IIIa	1909	E
Smith, William F.	VIId	1912	E
Smith, William H.	IIb	1902	E
Snelling, Fred N.	II	1903	D
Snickers, Eugene	Ia	1915	E
Snickers, Eugene	Ia	1916	E
Snow, Fred L.	IV	1900	E
Sorenson, David P.	IIIa	1916	E
Soule, William N.	VIId	1913	E
Spedding, Ephraim H.	IIIa	1899	E
Spiegel, Edward	V	1903	D
Spillane, James F.	VIa	1916	E
Spurr, Albert R.	VII	1908	E
Spurr, James H., Jr.	IV	1908	E
Stafford, James	Va	1915	E
Stahl, Milton C.	IIb	1915	E
Standish, John C.	IV	1911	D
Stanley, John R.	IIb	1911	E
Stearns, Orlo F.	IVa	1911	E
Steere, Samuel A.	Va	1914	E
Sterling, Walter	IIIa	1904	E
Stevens, Dexter	I	1904	D
Stevens, Frank W.	VI	1905	E
Stevens, Harold S.	IIIa	1912	E
Stevenson, Murray R.	III-V	1903	D
Stevenson, Robert P.	Ia	1912	E
Stevenson, William	II	1899	E
Stevenson, William	IIIa	1902	E
Stewart, Arthur A.	II	1900	D
Stewart, Charles	Va	1908	E
Stewart, George	Ia-IVa	1911	E
Stewart, George	Va	1914	E
Stewart, George	VIa	1916	E
Stewart, Walter L.	III	1903	D
Stewart, Warren D.	IVa	1915	E
Stewart, William W.	IV	1910	E
Stiehler, Arthur F.	Vb	1915	E
Stocks, Carl W.	VIa	1909	E
Stohn, Alexander C.	III-V	1906	D
Stokham, Burton I.	IV	1903	E
Stokham, Burton I.	P. G. IV	1904	E
Stokham, Ernest F.	IVa	1914	E
Stone, Ira A.	IV	1909	D
Stopherd, William H.	II-V	1899	E
Stopherd, William H.	VI	1902	E
Stopherd, William H.	IIIa	1905	E
Stopherd, William H.	P. G. IIIa	1906	E
Stopherd, William H.	P. G. IIIa	1909	E
Stopherd, William H.	VII	1910	E
Storer, Francis E.	II	1907	D

Name	Course	Class	Day or Evening
Stott, Bertram S.	Vb	1910	E
Stott, Samuel	IV	1910	E
Stronach, Irving N.	IV	1910	D
*Stursberg, Paul W.	II	1907	D
Sugden, Albert G.	IIIa	1912	E
Sugden, Albert G.	VII	1913	E
*Sullivan, Humphrey F.	Ia	1909	E
Sullivan, John D.	VI	1912	D
Sullivan, Joseph D.	IIIa	1916	E
Sullivan, Michael F.	VIb	1910	E
Sullivan, Michael F.	VIa	1913	E
Swan, Guy C.	II	1906	D
Swanson, Victor E.	IVa	1912	E
Swift, Edward S.	V	1899	E
Swift, Edward S.	Ia	1901	E
Swift, Edward S.	I	1902	D
Swift, John W.	IIb	1915	E
Sykes, Alvin E.	VIa	1909	E
Sylvain, Charles E.	VI	1913	D
Syme, James F.	II	1900	D
Taff, Joseph C.	VIa	1916	E
Takahashi, Gentaro	Ia	1916	E
Tarpey, John F.	IIa	1904	E
Taylor, Fred H.	Va	1916	E
Taylor, Harold S.	VIb	1912	E
Teichmann, Alfred A.	Vb	1908	E
Tennant, Joseph A.	VIb	1911	E
Thaxter, Joseph B., Jr.	II	1912	D
Thomas, Roland V.	I	1905	D
Thompson, Charles B.	VI	1904	E
Thompson, Everett L.	I	1905	D
Thompson, George	Vb	1915	E
Thompson, Henry J.	IV	1900	D
Tilton, Elliott T.	II	1899	D
Todd, Henry	VII	1910	E
Todd, Walter E.	VII	1916	E
Tonge, John	IV	1905	E
Tonge, Matthew	IIIa	1903	E
Toovey, Sidney E.	V	1904	D
Torpey, Henry K. W.	VIb	1914	E
Torpey, Henry K. W.	IVa	1915	E
Toshach, Reginald A.	II	1911	D
Towers, Frederic G.	Ia	1912	E
Tucker, Charles L.	Ia	1916	E
Tucker, John T.	Ia	1908	E
Tucker, John T.	Va	1909	E
Tucker, William W.	Ia	1916	E
Turgeon, Roderick	IVa	1912	E
Turner, Roscoe C.	IIb	1914	E
Twomey, Hugh	VIb	1914	E
Tyler, Lauriston W.	II	1916	D
Umpleby, Thomas B.	V	1902	E
Upton, Frank A.	Ia	1903	E
*Varney, Manley H.	IIIa	1902	E
*Varney, Manley H.	Ia	1903	E
Varnum, Arthur C.	II	1906	D
Varnum, Arthur C.	Vb	1907	E

\*Deceased

Name	Course	Class	Day or Evening
Varnum, Arthur C.	P. G. IIIa	1908	E
Varnum, Arthur C.	VII	1909	E
Vause, John	Va	1912	E
Vogt, Alfred H.	IIIa	1902	E
Vogt, Alfred H.	IIb	1909	E
Vogt, Harry A.	Vb	1906	E
Wade, Frank J.	Vb	1911	E
Wahlberg, Einar S.	Ia	1907	E
Wainwright, Harold	IVa	1913	E
Wainwright, Harold	IVb	1916	E
Walen, Ernest D.	VI	1914	D
Walker, Alfred S.	II	1911	D
Walker, Anna G. (See Pradel, Mrs. Alois J.)			
Walker, David	IIIa	1902	E
Walker, David	P. G. IIIa	1903	E
Walker, John J.	VIIb	1915	E
Walker, William, Jr.	VII	1906	E
Walsh, Michael L.	Ia	1909	E
Walton, Frank L.	Ia	1911	E
Walworth, Walter F.	VIIb	1915	E
Ward, Bernard D.	IIIa	1911	E
Ward, Herbert H.	Vb	1912	E
Ward, James J.	VII	1906	E
Wardrobe, William L.	Ia	1900	E
Ware, Edward W.	IIIa	1909	E
Waring, Joseph	VIa	1916	E
Warren, Philip H.	II	1905	D
Waterhouse, Joseph	IV	1900	E
Waters, Thomas W., Jr.	Va	1915	E
Waterworth, Frank W.	Vb	1907	E
Watson, Luther F.	IIb	1909	E
Watson, William	III	1911	D
Webb, Francis H.	V	1904	E
Webb, Francis H.	IIIa	1907	E
Webb, Frank H.	IV	1904	D
Webber, Arthur H.	IV	1901	D
Webber, John F.	IIIa	1907	E
Webber, John F.	P. G. IIIa	1908	E
Webster, Orrin H.	Ia	1912	E
Weigel, Frederick A.	VIIb	1909	E
Weinhold, William F.	IIIa	1915	E
Weinz, W. Elliot	IV	1908	D
Welch, Benjamin L.	VIIb	1910	E
Wesson, Paul B.	Ia	1901	E
West, Richard E.	IVa	1916	E
Wheelock, Stanley H.	II	1905	D
*Whitcomb, Harry E.	Ia	1906	E
Whitcomb, Roscoe M.	IV	1910	D
White, Royal P.	II	1904	D
Whitehead, Bennett	IIb	1901	E
Whitehill, Warren H.	IV	1912	D
Whitley, Arthur M.	IIa-IIb	1915	E
Whitman, William P.	IVa	1910	E
Whitman, William P.	IVb	1913	E
Whitney, Frederick A.	IV	1910	E
Whittaker, Thomas B.	IIb	1907	E

\*Deceased



Name	Course	Class	Day or Evening
Whittaker, Thomas B.	IIb	1908	E
Wicks, Frederic M.	IIIa	1912	E
Wiesberg, Harry A.	VIb	1916	E
Wiggin, Leon M.	IIIa	1907	E
Wiggin, Leon M.	P. G. IIIa	1908	E
Wightman, William H.	IV	1906	D
Wilde, Herman E.	IVa	1915	E
Wilde, Thomas E.	IIa	1905	E
Wilkinson, Joseph	IIIa	1912	E
Wilkinson, Joseph	VII	1913	E
Willey, Frank S.	Ia	1901	E
Willgeroth, Henry J.	IIIa	1908	E
Williams, Allen R.	Ia	1910	E
Williams, Allen R.	Va	1911	E
Williamson, Isaac F.	IV	1901	E
Willmott, Herbert J.	VIa	1911	E
Wilmot, Joseph	IIIa	1908	E
Wilmot, William	IIIa	1899	E
Wilson, Calvin E.	IIb	1902	E
Wilson, George H.	IIb	1902	E
Wilson, John S.	II	1903	D
*Wilson, Walter E. H.	I-V	1904	D
Wilton, George H.	IIIa	1899	E
Wing, Charles T.	IIIa	1900	E
Wing, Charles T.	III	1902	D
Wingate, William H.	IV	1908	D
Winslow, Warren A.	IIb	1915	E
Wise, Paul T.	II	1901	D
Wiswall, Frank T.	V	1905	E
Wolf, William C.	Va	1907	E
Wolf, William C.	Vb	1908	E
Wolger, John J.	IIIa	1907	E
Wollin, Frederick W.	Va	1911	E
Wood, Arthur S.	Va	1912	E
Wood, Ernest H.	IV	1911	D
Wood, Herbert C.	I	1906	D
Wood, J. Carleton	IV	1909	D
Wood, Jonathan	Ia	1902	E
Wood, Jonathan	Va	1908	E
Wood, Samuel J.	Ia	1915	E
Woodbury, Eugene P.	VII	1914	E
Woodbury, W. Sanford	Ia	1900	E
Woodcock, Eugene C.	II	1907	D
Woodies, Ida A.	IIIb	1900	D
Woodies, Ida A.	P. G. IIIb	1901	D
Woodman, Harry L.	I-III-V	1902	D
Woodruff, Charles B.	V	1906	D
Worthington, John A.	Ia	1910	E
Wright, Edward, Jr.	II	1905	D
Wright, Frederick J.	Vb	1911	E
Yare, John F.	Vb	1907	E
Yavner, Harry	II	1912	D
Young, Richard, Jr.	Va	1908	E
Young, Richard, Jr.	Vc	1909	E
Younger, Andrew	IIIa	1913	E
Younger, Andrew	VII	1914	E
Zimmer, George D.	IVa	1915	E

\*Deceased

## REGISTER OF GRADUATES

The following list has been corrected in accordance with information received previous to March 1, 1917. Any information regarding incorrect or missing addresses and occupations is earnestly solicited.

P. G. indicates Post Graduate Course.

### Day Course, 1899

Name	Diploma Course	Graduates Occupation
Bailey, Joseph W.	I	Superintendent, Davis Mills, Fall River, Mass.
Cuttle, James H.	II	
Fels, August B.	II	With William Fels, Inc., New York City.
Harmon, Charles F.	I	
Smith, Albert A.	I	Deceased.
Tilton, Elliott T.	II	With Western Electric Co., Boston, Mass.

### Certificate Holders

Burrage, Katherine C.	IIIb	Died May 16, 1914.
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### Evening Course, 1899

#### Certificate Holders

Berry, Frank M.	IIIa	Deceased.
Binns, Heaton	II-V	Foreman, Worsted Department, Shuttleworth Bros. Co., Amsterdam, N. Y.
Broadbent, James T.	Ia	Agent and manager, Meritas Mills, New York City.
Collier, John	IIIa	Manager, John and James Dobson, Inc., Philadelphia, Pa.
Crompton, Henry H.	II	Overseer, Worsted Yarns, Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIIa	Mill Owner, Merrimac Mills, Methuen, Mass.
Kellett, Irvine	II	Second Hand, Worsted Yarns, Pacific Mills, Lawrence, Mass.
McAlister, John W.	V	Deceased.
Marjerison, Isaiah D.	II	Overseer, Worsted Combing, Lower Pacific Mills, Lawrence, Mass.
Moir, Alexander L.	IIIa	Died December, 1914.
Noble, John T.	V	Overseer, Sawyer Woolen Mills, Dover, N. H.
Nugent, Thomas A.	II-V	Second Hand, Carding, Yund, Kennedy & Yund, Amsterdam, N. Y.
Spedding, Ephraim H.	IIIa	Lowell, Mass.
Stevenson, William	II	Superintendent, Spray Woolen Mill Co., Spray, N. C.

Name	Course	Occupation
Stopherd, William H.	II-V	With Saco-Lowell Shops, Lowell, Mass.
Swift, Edward S.	V	See Day, 1902.
Wilmot, William	IIIa	Designer, Hamilton Webb Co., Hamilton, R. I.
Wilton, George H.	IIIa	North Andover, Mass.

### Day Course, 1900

#### Diploma Graduates

Baldwin, Arthur L.	IV	Chemist, Monarch Chemical Laboratory, Lowell, Mass.
Barr, I. Walwin	I	Styler, F. U. Stearns & Co., New York City.
Bodwell, Henry A.	II	Superintendent, Smith and Dove Mfg. Co., Andover, Mass.
Brickett, Chauncey J.	II	Principal, School of Textiles, International Correspondence Schools, Scranton, Pa.
Lamson, George F.	I	With Morton Company, Worcester, Mass.
Perkins, John E.	III	Superintendent, S. N. and C. Russell Mfg. Co., Pittsfield, Mass.
Pradel, Alois J.	III	Designer, Montrose Woolen Mills, Woonsocket, R. I.
Sleeper, Robert R.	IV	Instructor in Dyeing, Lowell Textile School, Lowell, Mass.
Smith, Stephen E.	I	Head Instructor, Cotton Department, Lowell Textile School, Lowell, Mass.
Stewart, Arthur A.	II	Head Instructor, Finishing, Lowell Textile School, Lowell, Mass.
Syme, James F.	II	With American Felt Co., Boston, Mass., and Agent, Hawthorne Mills, Boston, Mass.
Thompson, Henry J.	IV	Dyer, Boston Rubber Shoe Co., Malden, Mass.

#### Certificate Holders

Burrage, Katherine C.	P. G.	IIIb	Deceased.
Campbell, Laura E.		IIIb	Died 1915.
Harrison, Mrs. (Goodhue, Amy H.)		IIIb	Dracut, Mass.
Lakeman, Fannie S.		IIIb	Designer, Salem, Mass.
Leach, John P.		I-V	Farmer, Littleton, N. C.
Merchant, Edith C.		IIIb	Supervisor of Drawing, Public Schools, Pepperell, Mass.
Parker, Harry C.		V	With George L. Parker, Boston, Mass.
Woodies, Ida A.		IIIb	Decorator, Lowell, Mass.

### Evening Course, 1900

#### Certificate Holders

Campbell, Albert D.	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Cawthra, Albert B.	IIb	
Colby, Arthur D.	Ia	Draftsman, Saco-Lowell Shops, Newton Upper Falls, Mass.

Name	Course	Occupation
Donnelly, James	Ia	Deceased.
Elston, Frederick R.	IIIa	Superintendent, Sonnhill Worsted Co., Danielson, Conn.
Howard, John	V	Overseer, Weaving, Thos. Kent Mfg. Co., Clifton Heights, Pa.
Hutton, Clarence	V	See Day, 1903.
Jones, William J.	IIb	Overseer, Worsted Spinning, U. S. Bunting Co., Lowell, Mass.
Maden, Harry	IIb	
Nelson, Ernest H.	IIb	With Accident Insurance Company of the Masonic Protection Association, Lowell, Mass.
Ogley, Samuel A.	IIb	Overseer, Worsted Spinning, Steere Worsted Mills, Providence, R. I.
Osgood, Charles F.	Ia	Draftsman, General Electric Company, Lynn, Mass.
Rowell, Herman C.	Ia-IIb	Deceased.
Silcox, Arthur E.	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Snow, Fred L.	IV	Tyngsboro, Mass.
Wardrobe, William L.	Ia	
Waterhouse, Joseph	IV	Lowell, Mass.
Wing, Charles T.	IIIa	See Day, 1902.
Woodbury, W. Sanford	Ia	Superintendent of Carding and Finishing, Bay State Cotton Corp., Newburyport, Mass.

### Day Course, 1901

#### Diploma Graduates

Buchan, Donald C.	II	Assistant Superintendent, Stevens Mills, North Andover, Mass.
Currier, John A.	II	Superintendent, Pentucket Mills, M. T. Stevens and Sons Co., Haverhill, Mass.
Ewer, Nathaniel T.	IV	Chemist, American Dyewood Co., Chester, Pa.
Foster, Clifford E.	II	With Columbia Rope and Twine Company, Auburn, N. Y.
Kingsbury, Percy F.	IV	Head of Color Department, Passaic Print Works, Passaic, N. J.
Marinel, Walter N.	I	Automobile Repairing and Supplies, North Chelmsford, Mass.
Moorhouse, William R.	IV	Chemist, Cassella Color Co., Boston, Mass.
Parker, B. Moore	I	Instructor, Carding and Spinning, A. and M. College, West Raleigh, N. C.
Webber, Arthur H.	IV	Chemist, Melville Color Co., Boston, Mass.
Wise, Paul T.	II	General Manager, Chelsea Fibre Mills, Brooklyn, N. Y.



# Certificate Holders

Bradley, Richard H.	V	Second Hand, Hargreaves Mill No. 2, Fall River, Mass.
Harrison, Mrs. (Goodhue, Amy H.)	P. G. IIIb	See Day, 1900.
Minge, Jackson C.	I-V	
Woodies, Ida A.	P. G. IIIb	See Day, 1900.

# Evening Course, 1901

## Certificate Holders

Aspinwall, William	IIb	Coats Thread Mill, Pawtucket, R. I.
Berry, Frank M.	V	Deceased.
Brooks, Noah	IIIa-V	
Burghardt, Paul C.	IIa	
Buzzell, William O.	IIIa	Overseer, Weaving, Dartmouth Mfg. Corp., New Bedford, Mass.
Cheetham, John James	IIIa	Overseer, Cabot Mfg. Co., Brunswick, Me.
Chippindale, Ernest W.	IIb	Pile Wire Maker, Frank Parker Pile Wire Co., Lowell, Mass.
Cowdell, Herbert	V	With Ipswich Mills, Lowell, Mass.
Davis, Henry	IIb	Deceased.
Donovan, Daniel F.	IIa	
Evison, William A.	V	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Farrell, Thomas	IIa	Woolen Spinner, Stirling Mills, Lowell, Mass.
Frame, William C.	V	Overseer, Johnson & Johnson, New Bruns- wick, N. J.
Gagan, John H.	V	Clinton, Mich.
Grant, Archibald	IIb	Lowell, Mass.
Grouke, Michael	IIb	Overseer, Worsted Drawing, Bigelow Car- pet Company, Lowell, Mass.
Hill, Daniel	IIb	Overseer, Passaic Worsted Spinning Co., Passaic, N. J.
Hitchcock, Thomas B.	Ia-IIa-IIIa	Textile Merchandising, Export and Im- port, Boston, Mass.
Holgate, Charles H.	IIa	With A. R. Andrews, Boston, Mass.
Hunter, Ralph	IIIa	With Hall, Hartwell and Company, New York City.
Jones, William J.	IIa	See Evening, 1900.
Killerby, Walter	IIb	Overseer, Park Worsted Mill, Lowell, Mass.
Law, Alfred	IIb	Overseer, Arlington Mills, Lawrence, Mass.
Lord, Wilfred	IIIa	Assistant Superintendent, Worsted Dept., Pacific Mills, Lawrence, Mass.
McQuade, Hugh B.	V	Die Setter, U. S. Cartridge Co., Lowell, Mass.
Minge, Jackson C.	IIIa	
Morris, Frank A.	V	
Nelson, Ernest H.	IIa	See Evening, 1900.
Noble, John T.	IIIa	See Evening, 1899.
Peel, Hudson	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Reynolds, Hiram L.	IIIa	Agent, Saunders Cotton Mills, Saunders- ville, Mass.



Name	Course	Occupation
Saunders, Edward B.	IIIa	Salesman, Remington Typewriter Co., Fall River, Mass.
Scanlon, Edward J.	IIb	Wood and Coal Dealer, Lawrence, Mass.
Shannon, Philip J.	V	Die Maker, Tubular Rivet and Stud Company, Wollaston, Mass.
Smith, Fred	IIb	Deceased.
Swift, Edward S.	Ia	See Day, 1902.
Wesson, Paul B.	Ia	Mechanical Superintendent, Wright Wire Co., Palmer, Mass.
Whitehead, Bennett	IIb	Overseer, Wood Worsted Mills, Lawrence, Mass.
Wiley, Frank S.	Ia	Second Hand, Picking and Carding, Pacific Mills, Lawrence, Mass.
Williamson, Isaac F.	IV	Foreman Dyer, Hamilton Mfg. Co., Lowell, Mass.

### Day Course, 1902

#### Diploma Graduates

Burnham, Frank E.	IV	Color Chemist, Schoellkopf Aniline & Chemical Co., Buffalo, N. Y.
Carter, Robert A.	IV	Textile Chemist, Roessler & Hasslacher Chemical Company, New York City.
Craig, Clarence E.	III	Farmer, Derry, N. H.
Haskell, Walter F.	IV	Overseer of Dyeing, Dana Warp Mills, Westbrook, Me.
Ramsdell, Theodore E.	I	Agent, Monument Mills, Housatonic, Mass.
Swift, Edward S.	I	Instructor, Classics and Mathematics, College of St. Francis Xavier, New York City.
Wing, Charles T.	III	Lowell, Mass.

#### Certificate Holders

Curran, Charles E.	II-III-V	Head Designer, Wood Worsted Mills, Lawrence, Mass.
Ferguson, Arthur F.	I	See Day, 1903.
Harris, George S.	I	Agent, Lanett Cotton Mills, and Lanett Bleachery and Dye Works, Lanett, Ala.
Holgate, Benjamin	III	Cost Accountant, Boott Mills, Lowell, Mass.
Woodman, Harry L.	I-III-V	Draftsman, Saco-Lowell Shops, Lowell, Mass.

### Evening Course, 1902

#### Certificate Holders

Adams, William R.	IIa	North Andover, Mass.
Barlow, Robert	V	Lowell, Mass.
Binns, Heaton	VI	See Evening, 1899.
Bowring, George P. B.	VI	With Saco-Lowell Shops, Lowell, Mass.
Brainerd, Irving L.	Ia	Deceased.
Burghardt, Edward S.	IIa	
Buzzell, William O.	P. G. IIIa	See Evening, 1901.
Cheetham, John James	P. G. IIIa	See Evening, 1901.
Collier, John	P. G. IIIa	See Evening, 1899.

Name	Course	Occupation
Cowdrey, Charles E.	V	Overseer, Talbot Mills, North Billerica, Mass.
Cremin, Daniel J.	Ia	
Donnellan, Frank T.	IIa	With Hirsh, Wickwire Co., Chicago, Ill.
Dudley, George E.	Ia	Stock and Bond Salesman, Harrington & Co., Boston, Mass.
Ferguson, Thomas	V	Overseer, Suncook Mills, Suncook, N. H.
Field, Charles W.	VI	Carpenter and Builder, Winter Hill Station, Boston, Mass.
Forrest, Fred G.	IIa	
Fortune, David A.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	P. G. IIIa	See Evening, 1899.
Good, Henry	Ia	Providence, R. I.
Haigh, Walter	IIIa	
Haworth, Joseph	VI	Travelling Mechanical Engineer, C. G. Sargent's Sons Corp., Graniteville, Mass.
Hogan, James A.	V	Hogan Bros., Lowell, Mass.
Hoyle, Edward	IIb	Lowell, Mass.
Johnson, Ernest A.	IIa-b	Superintendent Finishing Dept., Washington Mills, Lawrence, Mass.
Kelly, Michael H.	Ia	Overseer, Appleton Co., Lowell, Mass.
Kent, Ernest J.	IIb	Section Hand, English Drawing, Lower Pacific Mills, Lawrence, Mass.
Lamont, Walter M.	IIb	Agent, Wood Worsted Mill, Lawrence, Mass.
Lawliss, Augustine J.	V	Lowell, Mass.
Lee, Charles	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Leith, Edwin E.	IIIa	Superintendent, S. Slater & Sons, Inc., Webster, Mass.
Libby, C. Robert	VI	Chief Draftsman, International Steel and Ordnance Corporation, Lowell, Mass.
Molloy, Andrew	V	In City Water Department, Lowell, Mass.
Nugent, Thomas A.	VI	See Evening, 1899.
Osgood, Charles F.	VI	See Evening, 1900.
Potter, Richard W.	V	Overseer, Weaving, Massachusetts Cotton Mills, Lowell, Mass.
Rockwell, Samuel F.	IIa	Superintendent, Mule Dept., Davis and Furber Machine Co., No. Andover, Mass.
Schermerhorn, George E.	Ia	Superintendent, Chipman Mfg. Co., Easton, Pa.
Smith, William H.	IIb	Stamp Clerk, Post Office, Lawrence, Mass.
Stevenson, William	IIIa	See Evening, 1899.
Stopherd, William H.	VI	See Evening, 1899.
Umpleby, Thomas B.	V	Designer, Stanley Woolen Company, Uxbridge, Mass.
Varney, Manley H.	IIIa	Died January, 1916.
Vogt, Alfred H.	IIIa	Designing Dept., George E. Kunhardt's Mills, Lawrence, Mass.
Walker, David	IIIa	Overseer, Burlington Mills, Winooski, Vt.

Name	Course	Occupation
Wilson, Calvin E.	I Ib	Overseer of Winding, Beacon Mfg. Co., New Bedford, Mass.
Wilson, George H.	I Ib	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Wood, Jonathan	I a	Overseer, Lawrence Mfg. Co., Lowell, Mass.

### Day Course, 1903

#### Diploma Graduates

Bloom, Wilfred N.	IV	Manager of Construction, Louis K. Liggett Company, New York City.
Campbell, Orison S.	II	Superintendent, Canadian Consolidated Felt Co., Ltd., Kitchener, Ont.
Chamberlin, Frederick E.	I	Overseer of Spinning, Monument Mills, Housatonic, Mass.
Emerson, Frank W.	II	Agent, Moosup Mills, Moosup, Conn.
Evans, Alfred W.	III	Arlington Mills, Lawrence, Mass.
Evans, William R.	III	Foreman, Durgin Shoe Co., Haverhill, Mass.
Ferguson, Arthur F.	I	Head of Textile Department, Rhode Island School of Design, Providence, R. I.
Fuller, George	I	Associate Editor and Fabric Expert, American Wool and Cotton Reporter, New York City.
Gerrish, Walter	III	Concord, N. H.
Morrison, Fred C.	I	Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
Najar, G. George	IV	Overseer of Dyeing, Monument Mills, Housatonic, Mass.
Rasche, William A.	III	Deceased.
Snelling, Fred N.	II	With American Express Co., Haverhill, Mass.
Stewart, Walter L.	III	Cotton Goods Converter, Charles Kohlman & Co., Inc., New York City.
Wilson, John S.	II	Manager, Union Square Dept., Germania Life Insurance Co., New York City.

#### Certificate Holders

Bennett, Edward H.	V	Publisher, F. P. Bennett and Co., Inc., Boston, Mass.
Campbell, Louise P.	IIIb	Designer, Winchester, Mass.
Holgate, Benjamin	V	See Day, 1902.
Hutton, Clarence	III	Technical Editor, Textile World Journal, Boston, Mass.
Petty, George E.	I-V	Electrician, Sampson Power Company, Clinton, N. C.
Pradel, Mrs. Alois J. (Walker, Anra G.)	IIIb	534 South Main St., Woonsocket, R. I.
Reynolds, Isabel H.	III-V	Clerk, Arlington Mills, Lawrence, Mass.
Robinson, William C.	III-V	Inspector, H. F. Livermore & Co., Boston, Mass.
Spiegel, Edward	V	In theatrical business, New York City.
Stevenson, Murray R.	III-V	Farmer, Stevenson and Peterson, Princeton Depot, Mass.

# Evening Course, 1903

Name	Certificate Holders	Occupation
Course		
Adams, Henry S.	IIa	See Day, 1905.
Balmforth, James H.	IIa	Postal Clerk, P. O., Bloomfield, N. J.
Barry, Edward J.	IIIa	Overseer, Salmon Falls Mfg. Co., Salmon Falls, N. H.
Bastow, Henry	IIIa	Textile Inspector, U. S. Army, Philadelphia, Pa.
Baxter, Alvah J.	IIa	Clerk, Wood Worsted Mills, Lawrence, Mass.
Byam, Walter S.	VI	Clerk, Saco-Lowell Shops, Lowell, Mass.
Cady, Dennis J.	V	Loomfixer, Washington Mills, Lawrence, Mass.
Donnellan, Frank T.	V	See Evening, 1902.
Flynn, John J.	VI	Assistant Engineer, City of Lowell Fire Dept., Lowell, Mass.
French, Mrs. (Balmforth, Martha)	IIIa	Lowell, Mass.
Garner, William	IIIa	Order Clerk and Telegrapher, Warren Bros. Co., East Cambridge, Mass.
Gaunt, Alfred C.	IIa	See Evening, 1899.
Goodchild, George	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Gray, Finley M.	VI	Clerk, N. E. Telephone and Telegraph Co., Lowell, Mass.
Higgins, James A.	IIa	
Howard, John	IIIa	See Evening, 1900.
Hunter, Ralph	V	See Evening, 1901.
Jennings, James J.	IIIa	Overseer of Weaving, Jenckes Spinning Co., Pawtucket, R. I.
Johnson, Samuel L.	V	Overseer, Weaving, Walworth Bros., Lawrence, Mass.
Kelcher, John J.	IIb	Overseer, Drawing Dept., Prospect Mill, Lawrence, Mass.
Knowles, Frank E.	Ia	Inspector, Factory Mutual Insurance Co., Boston, Mass.
Lawrence, Charles	Ia	
Leach, Joseph W.	- V	Designer, Pacific Mills, Lawrence, Mass.
Lincourt, Hector L.	VI	
Lord, Wilfred	IIb	See Evening, 1901.
Mason, Frederick A.	Ia	
Moir, Alexander L.	P. G. IIIa	Died December, 1914.
Mortenson, Carl W.	IIIa	Died, 1914.
Mozley, Arthur	VI	Deceased.
Myers, James W.	IIIa-IV	Assistant Superintendent, U. S. Bunting Co., Lowell, Mass.
Nicholson, Richard	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Noonan, Denis T.	IIIa	Superintendent, Berkshire Woolen & Worsted Co., Pittsfield, Mass.
Palmer, G. Buel	IIIa	Manager, Cross Awning and Sign Co., Lowell, Mass.
Rockwell, Henry D.	IIa	Clerk, Davis and Furber Machine Co., No. Andover, Mass.
Schofield, John S.	IIIa	Designer, Berkshire Woolen and Worsted Co., Pittsfield, Mass.



Name	Course	Occupation
Schoon, Fenton	IIb	Section Hand, Worsted Drawing, Farr Alpaca Co., Holyoke, Mass.
Stokham, Burton I.	IV	
Tonge, Matthew	IIIa	Weaver, Dartmouth Mfg. Co., New Bedford, Mass.
Upton, Frank A.	Ia	Overseer, Warren Cotton Mills, West Warren, Mass.
Varney, Manley H.	Ia	Died January, 1916.
Walker, David	P. G. IIIa	See Evening, 1902.

### Day Course, 1904

#### Diploma Graduates

Abbot, Edward M.	II	Vice-President and Agent, Abbot Worsted Co., Graniteville, Mass.
Baldwin, Frederick A.	II	Secretary-Treasurer, Walter Blue & Co., Ltd., Sherbrooke, P. Q., Canada.
Clapp, F. Austin	II	Salesman, Dunmore Worsted Co., Inc., New York City.
Clogston, Raymond B.	IV	Overseer of Dyeing, Merrimack Mfg. Co., Lowell, Mass.
Culver, Ralph F.	IV	First Vice-President and General Manager, Tate Electrolytic Waterproofing Co., New York City.
Cutler, Benjamin W., Jr.	III	
Dewey, James F.	II	Superintendent, Woolen Mills, A. G. Dewey Co., Quechee, Vt.
Donald, Albert E.	II	Assistant Superintendent, Uxbridge Worsted Co., Uxbridge, Mass.
Jury, Alfred E.	IV	Director, Textile Section, U. S. Rubber Co., New York City.
Lucey, Edmund A.	II	Industrial Engineer, H. L. Gantt, New York City.
MacPherson, Wallace A.	III	Designer, Waskanut Mills, Farnumsville, Mass.
Meadows, William R.	I	Bureau of Markets, Department of Agriculture, Washington, D. C.
Stevens, Dexter	I	Superintendent, Esmond Mills, Esmond, R. I.
Webb, Frank H.	IV	Chemist, Washington Mills, Lawrence, Mass.
White, Royal P.	II	Agent, Stirling Mills, Lowell, Mass.

#### Certificate Holders

Halsell, Elam R.	I-V	
Horsfall, George G.	II-III-V	Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
Jones, Everett A.	III	See Day, 1905.
O'Donnell, John D.	I-V	
O'Hara, William F.	IV	
Parker, Everett N.	I-III-V	See Day, 1905.
Smith, Ralston F.	I	Manager and Secretary, The Cleveland Battery and Electric Company, Cleveland, Ohio.



Name	Course	Occupation
Toovey, Sidney E.	V	Assistant Manager, S. S. Learnard Co., Boston, Mass.
Wilson, Walter E. H.	I-V	Deceased.

### Evening Course, 1904

#### Certificate Holders

Adams, Michael E.	VI	Sales Agent, Bay State Milling Co., Boston, Mass.
Balmforth, James H.	IIa-b	See Evening, 1903.
Balmforth, William F.	VI	East Orange, N. J.
Barker, John P.	V	
Barrington, John A.	IV	Assistant Manager, Kalle Color & Chemical Co., New York City.
Boucher, John L.	VI	
Butler, Benjamin O.	VI	
Callahan, Patrick A.	VI	With Lower Pacific Mills, Lawrence, Mass.
Cheetham, John Joseph	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Conley, Frederick A.	VI	Picker Expert, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Connors, Edward F.	VI	Draftsman, Locks and Canals, Lowell, Mass.
Davis, Prentice T.	Ia	Overseer, D. Mackintosh & Sons Co., Holyoke, Mass.
Delmage, Edward R.	IIIa	With Globe Woolen Mills, Utica, N. Y.
Dempsey, John W.	IIa	Photographer, The Dempsey Studio, Ayer, Mass.
Donahue, Michael F.	VI	Foreman, Saco-Lowell Shops, Lowell, Mass.
Doole, George L.	VI	Clerk, U. S. Bunting Co., Lowell, Mass.
Dooley, Edward W.	VI	In business, Lowell, Mass.
Duggan, Francis P.	VI	Store Keeper, U. S. Cartridge Co., Lowell, Mass.
Frank, Emil M.	IIIa	Loomfixer, Arlington Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIb	See Evening, 1899.
Hempel, Frank	V	Signal Department, Boston & Maine Railroad, Lawrence, Mass.
Higgins, James A.	IIa-b	
Hoyle, Joseph	IIb	Overseer, U. S. Worsted Co., No. Chelmsford, Mass.
Jeannotte, Arthur	VI	Lowell, Mass.
Kershaw, William E.	V	Monotype Machinist, Courier-Citizen Co., Lowell, Mass.
Langevin, Felix D.	VI	Foreman, Kitson Division, Saco-Lowell Shops, Lowell, Mass.
Lord, Harry D.	IIIa	Selling Agent, Saco-Lowell Shops, Boston, Mass.
Lord, Wilfred	IIa	See Evening, 1901.
McBride, Robert G.	IIa	
Merrill, Edwin C.	VI	Assistant Engineer, Engineering Department, City Hall, Lawrence, Mass.

Name	Course	Occupation
Miller, Emil H.	V	Charge of Supply Dept., Lower Pacific Mills, Lawrence, Mass.
Moorehouse, Thomas	VI	Electrician, Arlington Mills, Lawrence, Mass.
Murphy, John H.	VI	Treasurer, Lowell Morris Plan Co., Lowell, Mass.
Notman, Frederick W.	Ia	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Patrick, Alexander	IIIa	Omaha, Neb.
Redman, Henry S.	IIIa	Assistant Agent, Stark Mills, Manchester, N. H.
Reed, Foster C. K.	VI	Steam Engineer, Farwell Bleachery, Lawrence, Mass.
Rhodes, Joseph E.	V	Chicago, Ill.
Rooney, George W.	Ia	Superintendent, Cotton Yarn Mill, N. H. Spinning Mills Co., Penacook, N. H.
Shaw, James	V	
Smith, Edward	Ia	Overseer, Bourne Mills, Fall River, Mass.
Smith, John W.	IIb	Automobile Machinist, Peerless Motor Car Company of New England, Boston, Mass.
Sterling, Walter	IIIa	New Bedford, Mass.
Stokham, Burton I.	P. G. IV	
Tarpey, John F.	IIa	With Merrimack Mfg. Co., Lowell, Mass.
Thompson, Charles B.	VI	Clerk, B. and M. Railroad, Lowell, Mass.
Webb, Francis H.	V	With Hobson & Lawler, Lowell, Mass.

### Day Course, 1905

#### Diploma Graduates

Adams, Henry S.	I	Treasurer and Secretary, The Springstein Mills, Chester, S. C.
Boyd, George A.	I	Accountant, Harmony Mills, Boston, Mass.
Carr, George E.	I	Bridgeport, Conn.
Cole, James T.	II	Superintendent, Industrial Dept., Mass. Commission for Adult Blind, Cambridge, Mass.
Dillon, James H.	III	Landscape and Architectural Designer, Park and Recreation Dept., Boston, Mass.
Harris, Charles E.	I	President and General Manager, Harris Garage and Machine Co., Easthampton, Mass.
Hollings, James L.	I	With Catlin and Company, New York City.
Hook, Russell W.	IV	Chemist, Arthur D. Little, Inc., Boston, Mass.
Jones, Everett A.	III	Superintendent, Nye and Wait Kilmar-nock Corporation, Auburn, N. Y.
Lewis, Walter S.	IV	Chief of Textile Division, National Bureau of Standards, Washington, D. C.
McKenna, Hugh F.	IV	Chemist, United Indigo and Chemical Co., Ltd., Chicago, Ill.
Midwood, Arnold J.	IV	Salesman, I. Levinstein and Company, Boston, Mass.
Moore, Everett B.	I	Manager and Buyer, Chadbourne and Moore, Chelsea, Mass.

Name	Course	Occupation
Parker, Everett N.	I	Manufacturer, Parker Spool and Bobbin Company, Lewiston, Me.
Thompson, Everett L.	I	Treasurer, The Direct Hosiery Co., Stoneham, Mass.
Warren, Philip H.	II	Superintendent, Hopeville Mfg. Co., Worcester, Mass.
Wheelock, Stanley H.	II	Superintendent and Secretary, Stanley Woolen Company, Uxbridge, Mass.

#### Certificate Holders

Arundale, Henry B.	II-III-V	See Day, 1907.
Conklin, Jennie G.	IIIb	Commercial Designer, Boston, Mass.
Curtis, William L.	II	With G. E. & H. F. Habich Co., Boston, Mass.
Hunt, Chester L.	III	With Waltham Watch Company, Waltham, Mass.
Lee, William H.	V	Treasurer, Lee's Wool Shop, Holyoke, Mass.
Roberson, Pat H.	I	Merchant, James R. Roberson and Sons, Cropwell, Ala.
Roberts, Carrie I.	IIIb	Designer, Lowell, Mass.
Thomas, Roland V.	I	
Wright, Edward, Jr.	II	Assistant Engineer, Massachusetts State Board of Health, Boston, Mass.

### Evening Course, 1905

#### Certificate Holders

Bake, Herbert	IIIa	With Peabody & Sons, Lawrence, Mass.
Bastow, Henry	V	See Evening, 1903.
Bell, Frederick W.	IIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Bowie, Samuel A.	VI	Chief Engineer, Pacific Mills, Lawrence, Mass.
Brown, James P.	IIIa	Lowell, Mass.
Bryant, Ernest L.	VI	Clerk, C. A. Templeton, Inc., Waterbury, Conn.
Burke, Thomas F.	Ia	Lowell, Mass.
Burns, Edward J.	IV	Tester, U. S. Cartridge Company, Lowell, Mass.
Burns, James E.	IV	Overseer, Testing Dept., U. S. Cartridge Co., Lowell, Mass.
Caron, Cleophas	Ia	Overseer, Ring Spinning Dept., Queen City Cotton Co., Burlington, Vt.
Collins, John A.	IIa-b	Secretary, Mutual Boiler Insurance Company, Boston, Mass.
Cook, Cheney E.	IIIa	With Winslow Brothers and Smith Company, Boston, Mass.
Custer, James J. E.	V	Letter Carrier, Lowell, Mass.
Dana, Clarence A.	VI	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Dick, Hugo P.	IIIa	Designer, Merrimack Mfg. Co., Lowell, Mass.
Dimlick, Benjamin C.	IIIa	Deceased.

Name	Course	Occupation
Erbe, Gustave	VI	Foreman, J. L. Thomson Mfg. Company, Waltham, Mass.
Foster, Sherwood L.	Ia	Lowell, Mass.
French, Ernest J.	Ia	Farm Superintendent, Robert Barrett, Cornish, N. H.
Gay, Earle B.	Ia	
Goodchild, George	VI	See Evening, 1903.
Harder, Elmer E.	VI	Janitor, Highland School, Lowell, Mass.
Haven, George W.	IIIa	Of Blake and Stearns, Boston, Mass.
Howard, Thomas	V	Overseer, T. Martin and Bro. Mfg. Co., Lowell, Mass.
Hunt, Herbert R.	VI	
Hunton, Lewis G.	IV	Shipping Clerk, C. I. Hood Co., Lowell, Mass.
Kenworthy, Joseph	Ia	
Kimball, Irving D.	VI	Cost Department, Saco-Lowell Shops, Lowell, Mass.
Lamson, George F.	VI	See Day, 1900
Linkletter, Alfred C.	VI	Farmer, Linkletter, P. E. I.
Lovell, Charles E.	VI	Los Angeles, Cal.
McManus, Hugh	V	
Maguire, James H.	VI	General Foreman, Saco-Lowell Shops, Lowell, Mass.
Martin, John C., Jr.	IIa-b	Died March 10, 1913.
Molloy, Andrew	IIIa	See Evening, 1902.
O'Neill, Peter F.	IV	Superintendent, Standard Processing Co., Chattanooga, Tenn.
Overend, John	V	
Redman, H. Stewart	V	See Evening, 1904.
Silk, Frederick C. M.	IV	Foreman of Powder House, Newton Mfg. Co., Lowell, Mass.
Simola, Emil J.	IIa-b	Finland.
Skinner, Clarence W.	IIIa	With Brightwood Mfg. Co., No. Andover, Mass.
Smith, Arthur	IIIa	Designer, Pemberton Mills, Lawrence, Mass.
Smith, George A.	IIIa	Overseer, Ludlow Manufacturing Associates, Ludlow, Mass.
Smith, William E.	IIIa	Clerk, Kennedy & Co., Lawrence, Mass.
Stevens, Frank W.	VI	Assistant Engineer, Locks & Canals, Lowell, Mass.
Stopherd, William H.	IIIa	See Evening, 1899.
Tonge, John	IV	Salesman, Holliday-Kemp Co., Inc., Boston, Mass.
Wilce, Thomas E.	IIa	Proprietor, Jeremiah Clark Machinery Co., Lowell, Mass.
Wiswall, Frank T.	V	Cost Clerk, Geo. E. Kunhardt's Mill, Lawrence, Mass.

## Day Course, 1906

### Diploma Graduates

Avery, Charles H.	II	Died January, 1913.
Bradford, Roy H.	II	Assistant Superintendent, Flax Mill, Smith and Dove Mfg. Company, Andover, Mass.



Name	Course	Occupation
Churchill, Charles W.	III	Lowell, Mass.
Cole, Edward E.	IV	Reporter, Bradstreet Co., Boston, Mass.
Currier, Herbert A.	I	Cotton Yarn Salesman, William Whitman & Co., Inc., New York City.
Curtis, Frank M.	I	Manager, Milton Branch, Wm. Curtis Sons Co., Milton, Mass.
Fleming, Frank E.	IV	Asst. Dyer and Finisher, Goodall Worsted Co., Sanford, Me.
Gahm, George L.	II	Superintendent, Yarn Department, Wood Worsted Mills, Lawrence, Mass.
Hennigan, Arthur J.	II	Boston Representative, Cox & Schreiber, Boston, Mass.
Swan, Guy C.	II	Chemist, U. S. Food Research Laboratory, Philadelphia, Pa.
Varnum, Arthur C.	II	Superintendent, Stirling Mills, Lowell, Mass.
Wightman, William H.	IV	With U. S. Color and Chemical Company, Boston, Mass.
Wood, Herbert C.	I	Assistant Superintendent, Union Wadding Co., Pawtucket, R. I.

#### Certificate Holders

Church, Charles R.	II-V	Physical Director, Alhambra High School, Alhambra, Calif.
Gillon, Sara A.	IIIb	Designer, Lowell, Mass.
Hildreth, Harold W.	II-V	
Hintze, Thomas F.	I	Resident Engineer, The Texas Co., Providence, R. I.
Kent, Clarence L.	III-V	Retail Manager, Standard Oil Co., No. Andover, Mass.
Lane, John W.	I	With Illinois Railroad, Chicago, Ill.
McDonnell, William H.	I-V	South Boston, Mass.
Newcomb, Guy H.	IV	Manager, Badische Co., San Francisco, Cal.
Reynolds, Isabel H.	P. G. III-V	See Day, 1903.
Stohn, Alexander C.	III-V	Textile Manager, C. Stohn, Hyde Park, Mass.
Woodruff, Charles B.	V	Buyer, Sharp & Co., Inc., Birmingham, Ala.

#### Evening Course, 1906

##### Certificate Holders

Abbott, Paul W.	Ia	Superintendent, Cadillac Motor Car Co., Detroit, Mich.
Amiot, Louis H.	Va	With American Hide and Leather Co., Lowell, Mass.
Armstrong, Elias B.	IIb	Agent, Hamilton Woolen Co., Southbridge, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Brouder, John J.	IIIa	Designer, Ayer Mills, Lawrence, Mass.
Brown, James P.	P. G. IIIa	See Evening, 1905.



Name	Course	Occupation
Brown, William G.	IIb	Wool Buyer, Quitman, Ga.
Burgess, Joseph H.	Va	Cloth Inspector, Arlington Mills, Lawrence, Mass.
Burnham, Joseph W.	IIIa	Designer, Lincoln Mills, Pascoag, R. I.
Burnham, Wilmont V.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Dick, Hugo P.	P. G. IIIa	See Evening, 1905.
Dickson, Andrew	IIa	Deceased.
Dimlick, Benjamin C.	P. G. IIIa	Deceased.
Dodge, Frank	Ia	Overseer, Hamilton Mfg. Co., Lowell, Mass.
Duce, Benjamin	IIIa	Overseer, Weaving, Ayer Mills, Lawrence, Mass.
Ellis, George W.	VII	Superintendent, A. D. Ellis & Sons, Monson, Mass.
Eyers, John T.	IV	Buckeye, Texas.
Frank, Emil M.	P. G. IIIa	See Evening, 1904.
Fulton, John M.	V	Lowell Bleachery, Lowell, Mass.
Gregson, Robert B.	Va	Foreman, American Optical Co., Southbridge, Mass.
Haigh, William	Vb	
Hartwell, Henry E.	VI	Doctor, Lawrence, Mass.
Hoessler, Carl	IIIa	Overseer, Weaving, M. T. Stevens & Son, No. Andover, Mass.
Howard, John	IIa	See Evening, 1900.
Hutton, Harold	V	
Hutton, John M.	Vb	
Inberg, Magnus	Ia	Finland.
Johnson, Ernest A.	V	See Evening, 1902.
Kidd, Thomas E.	IV	Overseer of Dyeing, Niantic Mfg. Co., East Lynn, Mass.
Laffert, August W.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
McCarthy, Joseph F.	IIIa	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
McLaughlin, Peter J.	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
McLay, John	Vb	Superintendent, Globe Mills, Utica, N. Y.
Maguire, James H.	Ia	See Evening, 1905.
Micheltmore, Harry	IIIa	Assistant Designer, Brightwood Mfg. Co., No. Andover, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Morton, Albert N.	IIb	Salesman, Morton & Andrews, Lowell, Mass.
Murphy, Cornelius D.	IIa	Proprietor, Belvidere Grocery, Savannah, Ga.
Nelson, Ernest H.	IIIa	See Evening, 1900.
O'Brien, David A.	IV	
Pedler, William A.	Ia	Superintendent, Cotton Department, Arlington Mills, Lawrence, Mass.
Pihl, Christian E.	VI	Burlington, Vt.
Pittendreigh, John M.	Ia	Erector, Saco-Lowell Shops, Charlotte, N. C.
Reardon, Timothy H.	VI	Instructor, Industrial School, Lowell, Mass.
Reynolds, Eugene A.	VI	With Lawrence Mfg. Co., Lowell, Mass.
Richards, Francis G.	IIa	North Andover, Mass.

Name	Course	Occupation
Rushworth, Walter	VI	Electrician, Girard Bros., Boston, Mass.
Schubert, George J.	V	Second Hand, Pemberton Co., Lawrence, Mass.
Senior, George	Va	Seattle, Wash.
Sharpe, John R.	VI	Overseer, Saco-Lowell Shops, Lowell, Mass.
Sheppard, Byron H.	VI	Architect and Engineer, Providence, R. I.
Silk, Patrick E.	VII	
Skinner, Clarence W.	P. G. IIIa	See Evening, 1905.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
	Va	
Smith, George A.	P. G. IIIa	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Vogt, Harry A.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Walker, William, Jr.	VII	Superintendent, Ottaquechee Woolen Co., No. Hartland, Vt.
Ward, James J.	VII	Pressman, Lowell Fertilizer Co., Lowell, Mass.
Whitcomb, Harry E.	Ia	Deceased.

### Day Course, 1907

#### Diploma Graduates

Arundale, Henry B.	II	With U. S. Conditioning and Testing Company, New York City.
Coman, James G.	I	Superintendent and Buyer, Tipton Cotton Mills, Covington, Tenn.
Craig, Albert W.	IV	In Laboratory, Pacific Mills, Lawrence, Mass.
Farmer, Chester J.	IV	Professor of Chemistry, Marquette Medical School, Milwaukee, Wis.
Haskell, Spencer H.	II	Worcester, Mass.
Hathorn, George W.	IV	Chemist, Lawrence Gas Co., Lawrence, Mass.
Hildreth, Harold W.	II	
Hoyt, Charles W. H.	IV	
Knowland, Daniel P.	IV	Chemist, Geigy-ter-Meer, New York City.
Mackay, Stewart	III	Instructor, Textile Design and Cloth Analysis, Lowell Textile School, Lowell, Mass.
Merriman, Earl C.	II	With Samson Cordage Works, Shirley, Mass.
Raymond, Charles A.	IV	Assistant to Superintendent, N. E. Gas and Coke Company, Everett, Mass.
Storer, Francis E.	II	Cashier, Windham County National Bank, Danielson, Conn.
Stursberg, Paul W.	II	Died 1913.
Woodcock, Eugene C.	II	Manufacturing Superintendent, Chelsea Fibre Mills, Brooklyn, N. Y.

#### Certificate Holders

Brannen, Leon V.	III-V	Philadelphia, Pa.
Ehrenfried, Jacob B.	II-V	With George Ehrenfried Co., Lewiston, Me.
Lane, John W.	I-V	See Day, 1906.
Parker, Mrs. Herbert L. (Meek, Lotta L.)	IIIb	474 Main St., Lewiston, Me.

# Evening Course, 1907

Name	Certificate Course	Holders Occupation
Ackroyd, Theodore C.	IIb	Arlington Mills, Lawrence, Mass.
Bain, William A.	VII	Color Chemist, C. Bischoff & Co., New York City.
Bake, Herbert	VII	See Evening, 1905.
Ballinger, Frederick W.	IIb	Second Hand, Silesia Worsted Mills, No. Chelmsford, Mass.
Barber, James E.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Barraclough, John C.	Ia	Foreman, Arlington Mills, Lawrence, Mass.
Bastow, Stephen W.	IV	Superintendent, Dyeing and Bleaching, Nashua Mfg. Co., Nashua, N. H.
Bayard, Pierre P.	IIIa	Adjutant, 351 Regiment d'Infanterie, France.
Begen, Thomas W.	IIb	Overseer, Washington Mills, Lawrence, Mass.
Benoit, William A.	Va	Second Hand, Everett Mills, Lawrence, Mass.
Bouille, Arthur L.	Vb	Loomfixer, Washington Mills, Lawrence, Mass.
Brannen, Leon V.	IIa	See Day, 1907.
Brouder, John J.	VII	See Evening, 1906.
Bucklitsch, Gustave J.	IIb	Overseer of Combing, Washington Mills, Lawrence, Mass.
Burgess, Joseph H.	Vb	See Evening, 1906.
Butterworth, Charles A.	Va	Acting Night Superintendent, Butler Mill, New Bedford, Mass.
Butterworth, John A.	IIb	With J. W. Coggeshall, Providence, R. I.
Carden, Francis E.	IIb	Deceased.
Carlson, Ernest B.	IIb	West Chelmsford, Mass.
Dick, Hugo P.	IIb	See Evening, 1905.
Dobbs, William	IIb	Second Hand, Massachusetts Mohair Plush Co., Lowell, Mass.
Dodge, Charles P.	IIa	Machinist, C. S. Dodge, Lowell, Mass.
Duce, Benjamin	VII	See Evening, 1906.
Flint, Leon G.	IIIa	Finished Percher, Washington Mills, Lawrence, Mass.
Frechette, Alphonse J.	IIb	Clerk, W. Gendron, Lawrence, Mass.
Gillespie, James E.	VII	With Ayer Mills, Lawrence, Mass.
Gregson, Robert B.	Ia-Vc	See Evening, 1906.
Haartz, John C.	VII	President and Treasurer, J. C. Haartz, Inc., Boston, Mass.
Haas, Ignatius	Ia	
Hamblett, Harry A.	Ia	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hanglin, Albert J.	IV	
Hanglin, William E.	Vb	
Hebert, Charles L. J.	IV	Fixer, U. S. Cartridge Co., Lowell, Mass.
Hitchen, H. Scott	Vb	
Hitchen, Thomas G.	Vb	
Howard, John	VII	See Evening, 1900.
Ignatius, Pentti	Va	Finland.
Jepson, Harry	Vb	With U. S. Bunting Co., Lowell, Mass.
Kelly, Michael H.	IIIa	See Evening, 1902.
Kirsch, Alfred O.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.

Name	Course	Occupation
Laffert, August W.	VII	See Evening, 1906.
Lake, William F.	IIIa	Overseer, Middlesex Co., Lowell, Mass.
Marjerison, T. Sydney	IIIa	Poultry Farmer, Salem, N. H.
Martin, Willard E.	IIIa	Wholesale Small Wares, Somerville, Mass.
Michelmores, Harry	VII	See Evening, 1906.
Myers, James W.	VII	See Evening, 1903.
Nelson, Charles E.	I Ib	With Sugden Press Bagging Co., No. Chelmsford, Mass.
O'Brien, Michael F.	I Ib	Lowell, Mass.
Porter, George K., Jr.	IIIa	Salesman, Wellington, Sears & Co., San Francisco, Calif.
Read, Paul A.	VII	Superintendent, Seaconnet Mills, Fall River, Mass.
Redman, H. Stewart	Ia	See Evening, 1904.
Ritter, Alfred E.	I Ib	Died December 12, 1913.
Robbins, John	I Ib	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Senior, George	Ia-Vc	See Evening, 1906.
Skinner, Clarence W.	VII	See Evening, 1905.
Smith, Arthur	Vc	See Evening, 1905.
Smith, Ernest B.	Vb	With Bissinger & Co., Portland, Oreg.
Smith, James	Vb	Loom Fixer, Wood Worsted Mills, Lawrence, Mass.
Smith, Percy H.	Vb	Washington Mills, Lawrence, Mass.
Smith, William E.	VII	See Evening, 1905.
Varnum, Arthur C.	Vb	See Day, 1906.
Wahlberg, Einar S.	Ia	Fitchburg, Mass.
Waterworth, Frank W.	Vb	Overseer, Ayer Mill, Lawrence, Mass.
Webb, Francis H.	IIIa	See Evening 1904.
Webber, John F.	IIIa	
Whittaker, Thomas B.	I Ib	Bookkeeper, Quidnick-Windham Mfg. Co., Providence, R. I.
Wiggin, Leon M.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Wolf, William C.	Va	Loomfixer, Pacific Mills, Lawrence, Mass.
Wolger, John J.	IIIa	Lawrence, Mass.
Yare, John F.	Vb	

### Day Course, 1908

	Diploma	Graduates
Abbott, George R.	II	Andover, Mass.
Ballard, Horace W. C. S.	IV	Chemist and Overseer of Dyeing, Felters Co., Millbury, Mass.
Dwight, John F., Jr.	II	Holliston, Mass.
Farr, Leonard S.	II	Overseer, Farr Alpaca Co., Holyoke, Mass.
Gay, Olin D.	II	Superintendent, Gay Bros. Co., Cavendish, Vt.
Hadley, Walter E.	IV	Chief Chemist, The Clark Thread Company, Newark, N. J.
Huising, Geronimo H.	I	Farmer, San Jose Estate and Mindoro Co., San Jose, Mindoro, P. I.
Jenckes, Leland A.	VI	Deceased.
Lewis, LeRoy C.	IV	Superintendent, U. S. Conditioning and Testing Co., Paterson, N. J.
Mailey, Howard T.	II	Assistant Superintendent, Lower Pacific Mills, Lawrence, Mass.
Perkins, J. Dean	III	Overseer, Worsted Dressing, Amoskeag Mfg. Co., Manchester, N. H.



Name	Course	Occupation
Prince, Sylvanus C.	VI	
Proctor, Braman	IV	Dyestuff Salesman, Badische Co., Boston, Mass.
Reynolds, Fred B.	II	Purchasing Agent, M. T. Stevens and Sons Co., No. Andover, Mass.
Robinson, Ernest W.	IV	Superintendent, Belding Bros. & Co., Rockville, Conn.
Weinz, W. Elliot	IV	With F. T. Fuller Co., Boston, Mass.
Wingate, William H.	IV	Chemist, Sidney Blumenthal and Co., Shelton, Conn.

### Evening Course, 1908

#### Certificate Holders

Arnold, Warren H.	VII	Maynard, Mass.
Barrington, James L.	IV	Dyestuff Salesman, Kalle Color and Chemical Co., Boston, Mass.
Begen, Thomas W.	IIb	See Evening, 1907.
Berry, Alfred H.	VI	Electrical Engineer, Silesia Worsted Mills, No. Chelmsford, Mass.
Broadbent, James H.	Vb	With U. S. Bunting Co., Lowell, Mass.
Broadbent, William	Vb	With Bay State Mills, Lowell, Mass.
Brown, James T.	IIIa	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Buckley, Harry	IV	Partner, Alfred Sagar & Co., Methuen, Mass.
Campbell, Archibald	IV	Sub-Foreman, United Drug Laboratories Co., Boston, Mass.
Carden, Francis E.	IIb	Deceased.
Carney, William J.	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Carter, Charles R.	Vb	Sexton, Grace Church, Lawrence, Mass.
Corr, Eben W.	Vb	Civil Engineer, City of Dallas, Dallas, Texas.
Corr, James F.	Vb	Loomfixer, Bay State Mills, Lowell, Mass.
Craven, Harry	VII	Clerk, Pacific Mills, Lawrence, Mass.
Dick, Hugo P.	Vb	See Evening, 1905.
Dixon, Arthur	IIIa	Loomfixer, American Woolen Co., Lawrence, Mass.
Dobbs, William	IIb	See Evening, 1907.
Dunn, George C.	IIIa	Cotton Dyer, Shawinigan Cotton Co., Shawinigan Falls, P. Q.
Flynn, William J.	Vb	Lowell, Mass.
Greenhalge, James	Vc	Overseer, Jackson Mfg. Co., Nashua, N. H.
Hallbauer, William R.	Vb	Lawrence, Mass.
Hanson, Edward	IIIa	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hardman, David B.	IV	
Harris, Louis	VII	Clothing Designer, J. Peavey and Brothers, Boston, Mass.
Hennessey, Ambrose M.	VII	Inspector of Transformers, General Electric Co., Pittsfield, Mass.
Hill, Harold	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Hoellrich, Martin J.	Vb	Instructor, Weaving, Lowell Textile School, Lowell, Mass.



Name	Course	Occupation
Ingham, Benjamin W.	Ia	Machinist, U. S. Cartridge Co., Lowell, Mass.
Lagerbald, Jarl	VII	Finland.
Lake, William F.	P. G. IIIa	See Evening, 1907.
McGill, William E.	VII	Hartland, Me.
McGovern, James	VII	Died April 24, 1911.
McKenna, Jerimiah J.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Maker, Isaac A.	Ia	Draftsman, Lawrence Mfg. Co., Lowell, Mass.
Marjerison, T. Sydney	P. G. IIIa	See Evening, 1907.
Marshall, Fred K. R.	VI	Storage Battery Engineer, C. I. Alexander & Sons, Lawrence, Mass.
Mortenson, Carl W.	IIa	Died 1914.
Nutter, James R.	VI	With Merrimack Mfg. Co., Lowell, Mass.
Osbeck, William J.	IIIa	Deceased.
Patterson, Alfred H.	IIIa	Clerk, Lower Pacific Mills, Lawrence, Mass.
Perkins, Thomas, Jr.	Ia	Superintendent, Sanford Mills, Reading, Mass.
Picken, William T.	IIIa	Purchasing Agent and Paymaster, Silesia Worsted Mills, No. Chelmsford, Mass.
Plumer, Paul T.	Vb	Cloth Inspector, U. S. Bunting Co., Lowell, Mass.
Porter, George K., Jr.	P. G. IIIa	See Evening, 1907.
Preble, George A.	IIIa	Designer, Massachusetts Cotton Mills, Lowell, Mass.
Saalfrank, Joseph C.	IIIa	With Arlington Mills, Lawrence, Mass.
Sally, Edward	VI	Baker, Worcester, Mass.
Schermerhorn, George E.	Va	See Evening, 1902.
Schuster, William F.	VII	Second Hand, Washington Mills, Lawrence, Mass.
Seddon, N. Graham	IIIa	Manager, Commonwealth Mfg. Co., Brooklyn, N. Y.
Semple, Alexander	IIIa	Lowell, Mass.
Shackleton, J. Henry	IV	Overseer, Dyeing, Pemberton Mills, Lawrence, Mass.
Simoneau, Verner W.	VI	Machinist, U. S. Cartridge Co., Lowell, Mass.
Spurr, Albert R.	VII	Finisher, Atlantic Mills, Olneyville, R. I.
Spurr, James H.	IV	Bacteriologist, State Board of Health Experimental Station, Lawrence, Mass.
Stewart, Charles	Va	
Teichmann, Alfred A.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Tucker, John T.	Ia	Clerk, Saco-Lowell Shops, Lowell, Mass.
Varnum, Arthur C.	P. G. IIIa	See Day, 1906.
Webber, John F.	P. G. IIIa	
Whittaker, Thomas B.	IIb	See Evening, 1907.
Wiggin, Leon M.	P. G. IIIa	See Evening, 1907.
Willgeroth, Henry J.	IIIa	In business, Hillsboro Dairy Co., Hillsboro, N. H.
Wilmot, Joseph	IIIa	Assistant Superintendent, Bay State Cotton Corporation, Lowell, Mass.
Wolf, William C.	Vb	See Evening, 1907.
Wood, Jonathan	Va	See Evening, 1902.
Young, Richard, Jr.	Va	Lowell, Mass.

## Day Course, 1909

Name	Course	Occupation
Brainerd, Arthur T.	IV	Salesman, Farbwerke Hoechat Co., Chicago, Ill.
Conant, Harold W.	I	Assistant Manager, Conant, Houghton & Co., Littleton, Mass.
Fairbanks, Almonte H.	II	Treasurer, Middlesex Knitting Co., Wakefield, Mass.
Ferguson, William G.	III	With Ludlow Mfg. Associates, Ludlow, Mass.
Fiske, Starr H.	II	Designer, D. Goff & Son, Pawtucket, R. I.
Gyzander, Arne K.	IV	Color Chemist, Dana Warp Mills, Westbrook, Me.
Holden, Francis C.	IV	Manager, Union Dyeing and Finishing Works, New York City.
Kay, Harry P.	II	With Richard L. Wallace & Co., Philadelphia, Pa.
Laughlin, James K.	III	Assistant to Superintendent, Saxonville Mills, Saxonville, Mass.
Levi, Alfred S.	IV	Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
Mason, Archibald L.	VI	Billerica, Mass.
Mullen, Arthur T.	II	Designer, Sutton's Mills, No. Andover, Mass.
Newall, J. Douglas	IV	Manager, Easton Finishing Co., Easton, Pa.
Parkis, William L.	I	Efficiency Man, Cheney Bros., So. Manchester, Conn.
Pease, Chester C.	I	Superintendent, Yarn Mill, Shaw Stocking Co., Lowell, Mass.
Potter, Carl H.	I	Accounting, Brighton Mills, Passaic, N. J.
Prescott, Walker F.	IV	Chemist and Salesman, Sherwin and Williams Company, Montreal, Canada.
Saunders, Harold F.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Stone, Ira A.	IV	President and General Manager, American Waste Company, Inc., Boston, Mass.
Wood, J. Carleton	IV	Textile Expert, Republic Rubber Co., Youngstown, Ohio.

## Evening Course, 1909

### Certificate Holders

Anderson, Carl A.	IV	Machinist, Lenot Motor Co., Boston, Mass.
Arnold, Warren H.	IIIa	See Evening, 1908.
Bailey, Rothwell	Va	With Massachusetts Cotton Mills, Lowell, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Banks, Jonas	Va	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Barr, Mrs. John E. (Butler, Elizabeth M.)	IIIb	Lowell, Mass.
Benoit, Benjamin L.	VIb	Bookkeeper, Bay State Cotton Corporation, Lowell, Mass.
Booth, Arthur	IIIa	Overseer, Bates Mfg. Co., Lewiston, Me.
Bowen, Herbert E.	IIIa	Superintendent, Shaw Stocking Co., Lowell, Mass.

Name	Course	Occupation
Buckley, Richard A.	Vb	Time Recorder, U. S. Cartridge Co., Lowell, Mass.
Bunce, Raymond H.	Vb	Salesman, American Woolen Co., New York, N. Y.
Carman, William	Va	Fixer, Tremont and Suffolk Mills, Lowell, Mass.
Chesworth, Frank K.	Va	With Everett Mills, Lawrence, Mass.
Cockell, Frederick H.	IIIa	Superintendent, College Poultry Farm, Massachusetts Agricultural College, Amherst, Mass.
Cowdrey, Charles E.	Vb	See Evening, 1902.
Davison, Frank L.	Vb	Loomfixer, Talbot Mills, No. Billerica, Mass.
Dulligan, Charles E.	VIa	Overseer, U. S. Cartridge Co., Lowell, Mass.
Dunning, Carlos W.	Vib	Second Hand, Appleton Co., Lowell, Mass.
Gaunt, Ernest H.	IIIa	Secretary and Treasurer, Optical Manufacturers' Association, Providence, R. I.
Gilinson, Philip J.	VIa	Experimental Work, Heinze Electric Co., Lowell, Mass.
Gordon, Herbert E.	IIIa	Clerk, Arlington Mills, Lawrence, Mass.
Hanson, Edward	P. G. IIIa	See Evening, 1908.
Hayes, Michael C.	Ila	In business, No. Billerica, Mass.
Hill, Harold	Va	See Evening, 1908.
Hillier, Arthur P.	Iib	Night Superintendent, Silesia Worsted Mills, No. Chelmsford, Mass.
Hodgkins, Albert A.	VII	Superintendent of Narrow Fabric, A. & E. H. Henkels, Bridgeport, Conn.
Holt, Harry C.	VIa	
Houston, William I.	IIIa	
Howell, Edward A.	Va	Loomfixer, Pemberton Mills, Lawrence, Mass.
Joyce, John	Vc	
Kaler, Harold F.	Vib	Foreman, General Electric Co., Lynn, Mass.
Kelley, Bernard J., Jr.	VIc	In business, Brick work and Architecture, New York City.
Kershaw, Benn	Va	Overseer, Boott Mills, Lowell, Mass.
Lincourt, Henry E.	Vib	With Stover & Bean, Lowell, Mass.
McClure, Charles G.	Vib	With Heinze Electric Co., Lowell, Mass.
McLay, John	Iib	See Evening, 1906.
Madden, Peter	Va	In Business, Lowell, Mass.
Mahoney, Dennis J.	Vb	Postal Clerk, No. Billerica, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Musard, Albert E., Jr.	Vc	Assistant Foreman, Remington Arms, Bridgeport, Conn.
Nelson, Ernest H.	Ia	See Evening, 1900.
Orrell, Frank L.	Vib	Second Hand, Massachusetts Mohair Plush Co., Lowell, Mass.
Palmer, G. Buel	Vb	See Evening, 1903.
Paquin, Joseph	VIa	Machinist, U. S. Government, Schofield Barracks, N. H.
Parsons, Joseph G.	IIIa	Pattern Weaver, Thos. Kitson & Son, Stroudsburg, Pa.
Pearson, Fred	VIa	Machinist, Saco-Lowell Shops, Lowell, Mass.
Read, Paul A.	Va	See Evening, 1907.

Name	Course	Occupation
Robinson, Thomas	Ia	Fitchburg, Mass.
Ryan, Edward P.	Ia	Lowell, Mass.
Schubert, George J.	IIIa	See Evening, 1906.
Schuerfeld, Harry W.	IIIa	Salesman, Sparrow-Chisholm & Co., Boston, Mass.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
Smith, George A.	VII	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stocks, Carl W.	VIa	Statistician, American Electric Railway Assn., New York City.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Sullivan, Humphrey F.	Ia	Deceased.
Sykes, Alvin E.	VIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Tucker, John T.	Va	See Evening, 1908.
Varnum, Arthur C.	VII	See Day, 1906.
Vogt, Alfred H.	IIb	See Evening, 1902.
Walsh, Michael L.	Ia	Lowell, Mass.
Ware, Edward W.	IIIa	With Wellington, Sears & Co., Boston, Mass.
Watson, Luther F.	IIb	Clerk, Arlington Mills, Lawrence, Mass.
Weigel, Frederick A.	VIb	Machinist, Pacific Mills, Lawrence, Mass.
Young, Richard, Jr.	Vc	See Evening, 1908.

#### Day Course, 1910

Diploma Graduates		
Arienti, Peter J.	IV	Chief Chemist, Eddystone Manufacturing Company, Eddystone, Pa.
Cary, Julian C.	VI	Resident Manager for Connecticut, American Mutual Liability Insurance Co., Hartford, Conn.
Clark, Thomas T.	II	Treasurer, Talbot Mills, No. Billerica, Mass.
Duval, Joseph E.	II	Philadelphia Representative, A. N. Briggs Company of Boston, Philadelphia, Pa.
Finlay, Harry F.	IV	Chemist, American Dyewood Co., New York City.
Fletcher, Roland H.	VI	Engineering Department, Osgood Bradley Car Co., Worcester, Mass.
Gale, Harry L.	III	Manager, Fancy Goods Dept., Wilmerding & Bissett, New York City.
Goldberg, George	VI	Draftsman, Watertown Arsenal, Watertown, Mass.
Hardy, Philip L.	VI	General Contractor and Builder, Andover, Mass.
Howe, Woodbury K.	I	With Stark Division, International Cotton Mills, Manchester, N. H.
Hurtado, Leopoldo, Jr.	VI	General Manager, Hurtado and Co., Uruapan, Mich., Mexico.
Jelleme, William O.	I	With Brighton Mills, Passaic, N. J.
Keough, Wesley L.	II	Paymaster, Massachusetts Mohair Plush Co., Lowell, Mass.
Lamb, Arthur F.	II	Manager, Rockland Cleaning & Dyeing Co., Rockland, Me.
McCool, Frank L.	IV	Salesman, W. Beckers Aniline and Chemical Works, Boston, Mass.
Manning, Frederick D.	IV	Investigator, Cheney Bros., So. Manchester, Conn.
Murray, James A.	II	With Talbot Clothing Co., Boston, Mass.



Name	Course	Occupation
Nichols, Raymond E.	VI	Superintendent, Lowell Bleachery, Lowell, Mass.
Putnam, Leverett N.	IV	Dyer, Arlington Mills, Lawrence, Mass.
Reed, Norman B.	I	Industrial Engineer, Boott Mills, Lowell, Mass.
Robson, Frederick W. C.	IV	
Smith, Doane W.	II	Efficiency Dept., Ludlow Manufacturing Associates, Ludlow, Mass.
Smith, Theophilus G., Jr.	IV	Groton, Mass.
Stronach, Irving N.	IV	Dyer and Finisher, Aberfoyle Mfg. Co., Chester, Pa.
Whitcomb, Roscoe M.	IV	Druggist, R. M. Whitcomb & Company, Ashland, N. H.

### Evening Course, 1910

#### Certificate Holders

Anderton, Harry	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Atkinson, Norman	Vb	Of Whitwham & Atkinson, Lawrence,
Bailey, Carl E.	Ia	General Manager, Franklin Mills Corp., Franklin, Mass.
Banks, Jonas	Vc	See Evening, 1909.
Berry, Percy W.	Vb	General Manager, Walbuck Crayon Co., Lawrence, Mass.
Bourchard, Ethan J.	Vc	Superintendent, Falconer Towel Mills, Falconer, N. Y.
Bourchard, Robert R.	Vb	Photographer, Indianapolis, Ind.
Burgess, Joseph H.	IIIa	See Evening, 1906.
Campbell, Edward G.	VIc	Auctioneer, Real Estate and Insurance, Lowell, Mass.
Christison, Hugh	IV	Assistant Chemist, Arlington Mills, Lawrence, Mass.
Cox, Edward J.	IIIa	Assistant Overseer, Merrimack Mfg. Co., Lowell, Mass.
Cutress, Albert J.	VIc	Machinist, Saco-Lowell Shops, Lowell, Mass.
Deely, John A.	Vb	Pittsfield, Mass.
Duckett, Fred I.	Vb	Lawrence, Mass.
Dulligan, Lawrence F.	VIa	Machinist, Vulcan Iron Works, Seattle, Wash.
Dunn, George C.	IVa	See Evening, 1908.
Eklund, Louis V.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Fielding, Fred	Vc	With Merrimack Mfg. Co., Lowell, Mass.
Flemings, Lester A.	Va	Manager, Bay State Cotton Corporation, Lowell, Mass.
Flynn, John	VIc	Toolmaker, Kitson Plant, Saco-Lowell Shops, Lowell, Mass.
Flynn, Patrick	Vb	Deceased.
Fujiyoshi, Heisayu	Ia	Died April 19, 1915.
Gaspar, Edith E.	IIIb	Clerk, Lawrence Mfg. Co., Lowell, Mass.
Gauthier, William	Vb	With U. S. Bunting Co., Lowell, Mass.
Hering, Paul C.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Hibbert, George E.	Va	Inspector, Boott Mills, Lowell, Mass.
Hill, Ellsworth O. C.	IIb	Assistant Superintendent, Yarn Dept., Wood Worsted Mills, Lawrence, Mass.



Name	Course	Occupation
Hilliard, William B.	VIa	Machinist, B. & M. R. R., North Billerica, Mass.
Hird, Arthur W.	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.
Hird, James A.	IVa	Chemist, B. & M. and N. Y., N. H. & H. R. R., Boston, Mass.
Hodgkins, Albert A.	IIIa	See Evening, 1909.
Hoellrich, Martin J.	Vc	See Evening, 1908.
Holt, Gavin O.	IVa	
Houston, William I.	Vb	
Hunton, John H.	VII	See Day, 1911.
Hurtado, Leopoldo, Jr.	Vc	See Day, 1910.
Hutton, Thomas V.	Vb	Fireman, Fore River Shipbuilding Co., Quincy, Mass.
Jackson, Frank	VIb	With Copper Queen Consolidated Mining Co., Bisbee, Ariz.
Jean, Adhemard C.	VIa	Inspector, Line Dept., Bay State Street Railway Co., Lowell, Mass.
Jordan, Frederic W.	IV	Surveyor, Smith and Brooks, Lowell, Mass.
Jorde, Linville T.	VIc	Cable Splicing, N. E. Telephone & Telegraph Co., Dover, N. H.
Kershaw, Benn	Vc	See Evening, 1909.
Kershaw, Samuel S.	IIb	Second Hand, Silesia Worsted Mills, No. Chelmsford, Mass.
Krause, George R.	VII	Assistant Finisher, Arlington Mills, Lawrence, Mass.
LaJeunesse, Joseph A.	IVa	With Primo Co., Montreal, Canada.
Leck, Arthur J.	VII	Head of Technical Department for Fabric Analysis, Earl & Wilson, Troy, N. Y.
Ledoux, Blanche H.	IIIb	Clerk, A. G. Pollard Co., Lowell, Mass.
Lemire, Arthur	Ia	Overseer, Renfrew Mfg. Co., Adams, Mass.
McAuliffe, Patrick D.	VIb	Glazier, Lowell, Mass.
McElroy, Samuel H.	Vb	With Heinze Electric Co., Lowell, Mass.
Mabbett, Albert L.	IIIa	Superintendent, Newport Woolen Co., Newport, Me.
Maxcy, Leo M.	VIc	Foreman, F. E. Jewett and Co., Lowell, Mass.
Messiah, Hiram G.	Vb	
Murphy, Mrs. (Gookin, Alice L.)	IIIb	Washington, D. C.
Nelson, Ernest H.	Vc	See Evening, 1900.
Nelson, Gustave A.	Vb	With T. Martin and Bro. Mfg. Co., Lowell, Mass.
Nichols, Clarence W.	Vb	With F. F. Field Co., Montello, Mass.
Nicoll, John	IVa	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Paquin, Joseph	VIb	See Evening, 1909.
Pettersen, Birger	VIa	Master Mechanic, Lowell Bleachery, Lowell, Mass.
Phelps, Mary I.	IIIb	Teacher, City of Lowell, Lowell, Mass.
Redman, H. Stewart	IV	See Evening, 1904.
Robinson, Thomas	Vc	See Evening, 1909.
Root, Francis X.	IIIa	Loomfixer, Hamilton Mfg. Co., Lowell, Mass.
Shackleton, John H.	Ia	See Evening, 1908.

Name	Course	Occupation
Stewart, William W.	IV	Overseer of Dyeing, Esmond Mills, Esmond, R. I.
Stopherd, William H.	VII	See Evening, 1899.
Stott, Bertram S.	Vb	Loomfixer, Geo. E. Kunhardt, Lawrence, Mass.
Stott, Samuel	IV	Dyer, Arlington Mills, Lawrence, Mass.
Sullivan, Michael F.	Vib	With Merrimack Woolen Co., Dracut, Mass.
Todd, Henry	VII	With Lawrence Gas Co., Lawrence, Mass.
Welch, Benjamin L.	Vib	Installer, N. E. Tel & Tel. Co., Eastern Mass. Division, East Lynn, Mass.
Whitman, William P.	IVa	Second Hand, Farwell Bleachery, Lawrence, Mass.
Whitney, Frederick A.	IV	Dyer, John S. Boyd Co., Williamstown, Mass.
Williams, Allen R.	Ia	Clerk, Crompton-Richmond Co., New York City.
Worthington, John A.	Ia	Of Angus & Worthington, Burlington, Vt.

### Day Course, 1911

#### Diploma Graduates

Adams, Tracy A.	IV	Second Hand, Fancy Dyeing, Pacific Mills, Lawrence, Mass.
Bailey, Walter J.	IV	With Bayburn Cleansing Shop, Cambridge, Mass.
Blaikie, Howard M.	II	Assistant to Styler and Salesman, American Woolen Co., New York City.
Cameron, Elliott F.	IV	Manager, Claim Department for Massachusetts, New Amsterdam Casualty Company, Boston, Mass.
Chandler, Proctor R.	IV	Chemist, Boston Bio-Chemical Laboratory, Boston, Mass.
Chisholm, Lester B.	I	Efficiency Manager, Everlastik, Inc., Boston, Mass.
Dewey, Maurice W.	II	Treasurer, Peck Brothers Co., Montpelier, Vt.
Flynn, Thomas P.	IV	Assistant Dyer, Middlesex Bleach, Dye & Print Works, Somerville, Mass.
Ford, Edgar R.	IV	Finisher, Saylesville Bleachery, Saylesville, R. I.
Gainey, Francis W.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Hay, Ernest C.	II	With Monomac Spinning Co., Lawrence, Mass.
Hendrickson, Walter A.	II	With Wiley, Bickford & Sweet Co., Worcester, Mass.
Hubbard, Ralph K.	IV	With Squam Lake Woolen Co., Ashland, N. H.
Hunton, John H.	II	Treasurer, Newichawanick Company, So. Berwick, Me.
Martin, Harry W.	IV	Chemist, Hood Rubber Co., Watertown, Mass.
Merrill, Allan B.	IV	Chemist, B. F. Goodrich Co., Akron, Ohio.
Moore, Karl R.	IV	Chemist, Atlantic Mills, Providence, R. I.
O'Connell, Clarence E.	IV	Second Hand in Dyehouse, Boston Mfg. Co., Waltham, Mass.

Name	Course	Occupation
Pearson, Alfred H.	IV	Second Hand, Dyehouse, Goodall Worsted Co., Sanford, Me.
Rich, Everett B.	III	Managing Partner, C. H. Greenleaf Co. Hotel Vendome, Boston, Mass. and assistant to President, Profile and Flume Hotels Co., Profile House, N. H.
Sidebottom, Leon W.	IV	Second Hand, Dyehouse, Appleton Co., Lowell, Mass.
Standish, John C.	IV	Assistant Superintendent, F. C. Huyck and Sons, Albany, N. Y.
Toshach, Reginald A.	II	Assistant Designer, M. T. Stevens and Sons Co., Haverhill, Mass.
Walker, Alfred S.	II	Superintendent of Wet Finishing, Essex Mills, Picton, N. J.
Watson, William	III	Real Estate Salesman, F. E. Watson, Haverhill, Mass.
Wood, Ernest H.	IV	Instructor, Department of Biological Chemistry, Marquette University School of Medicine, Milwaukee, Wis.

### Evening Course, 1911

#### Certificate Holders

Andrews, Oliver	Ia-Va	Salesman, Wellington, Sears & Co., New York City.
Ballinger, William E.	I Ib	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Barnes, Joseph	Ia	
Bastow, Percy	IVa	Dyer's Assistant, Wood Worsted Mills, Lawrence, Mass.
Birkby, Charles H.	IVa	Superintendent of Dyeing, J. & J. Dobson, Inc., Philadelphia, Pa.
Brown, William F.	VIb	Master Mechanic, U. S. Worsted Co., Lowell, Mass.
Burke, James F.	Vc	U. S. Navy.
Carpilio, John A.	VIa	With Alfred Kimball Shoe Co., So. Lawrence, Mass.
Carty, Thomas P.	Vb	Lowell, Mass.
Christison, Hugh	IVd	See Evening, 1910.
Cochrane, John	VIb	Electrician, Lowell Gas Light Co., Lowell, Mass.
Cote, George W.	VIb	With Shaw Stocking Co., Lowell, Mass.
Cox, Edward J.	Va	See Evening, 1910.
Dean, Hubert R.	VIb	Assistant Engineer, John A. Stevens, Eng., Lowell, Mass.
Delaney, Michael J.	Vb	Fixer, U. S. Cartridge Co., Lowell, Mass.
Dodge, Ernest W.	Vb	
Downs, John F.	VI d	With Heinze Electric Co., Lowell, Mass.
Dulligan, Thomas	VIa	With U. S. Cartridge Co., Lowell, Mass.
Flaherty, William	Vb	With Faulkner's Mill, No. Billerica, Mass.
Fournier, Albert A.	Ia	Overseer, Renfrew Mfg. Co., Adams, Mass.
Fujiyoshi, Heisayu	Va	Died April 19, 1915.
Gakidis, Alexander N.	IVa	Proprietor of Drug Store, Manchester, N. H.
Garrity, Joseph F.	VI d	Machinist, U. S. Cartridge Co., Lowell, Mass.

Name	Course	Occupation
Glennon, Edward M.	IVa	Assistant Dyer, Dana Warp Mills, Westbrook, Me.
Goodwin, Ross	Vb	With U. S. Bunting Co., Lowell, Mass.
Gustafson, Alfred L.	IVa	Assistant Heating Engineer, Avery Chemical Co., Wamesit, Mass.
Handley, John M.	Vb	Assistant Overseer, U. S. Cartridge Co., Lowell, Mass.
Hanslip, Charles W.	Vb	
Hartwell, Marcus H.	Ia-Va	Cost Clerk, Warren Cotton Mills, West Warren, Mass.
Heaton, Forster G.	IV	Died December, 1914.
Herrick, William E.	VII	Overseer, Albany Felt Co., Albany, N. Y.
Hibbert, George E.	Vc	See Evening, 1910.
Hodge, William	VIa	Clerk, Plymouth Mills, Lawrence Mass.
Kennedy, William E.	VIa	Shipping Clerk, Arlington Mills, Lawrence, Mass.
Lachance, Melina	IIIb	With A. G. Pollard Co., Lowell, Mass.
Lemire, Arthur	Va	See Evening, 1910.
Linberg, Joseph F.	IVa	Of J. F. Linberg Co., Jamestown, N. Y.
Logan, George H. S.	IV	
McNamara, Thomas	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Manning, James B.	IVa	Dyer, Felters Co., Millbury, Mass.
Marsden, Phillips B.	IVa	Assistant Superintendent, U. S. Worsted Co., Lawrence, Mass.
Milot, Joseph E.	VIc	Carpenter, Amasa Pratt Co., Lowell, Mass.
Murphy, Howard H.	I Ib	In business, Boston, Mass.
Nelson, James A.	Ia	Superintendent, H. E. Locke & Co., Inc., Boston, Mass.
Nelson, Sigfred W.	VI d	Machinist, Spring Snap Fastener Co., Lynn, Mass.
Newall, Preston	Ia	Overseer, Kosciusko Cotton Mill, Kosciusko, Miss.
Newsholme, Charles E.	VI b	Student, Wentworth Institute, Boston, Mass.
Nichol, Samuel J.	IVa	In charge of Dyehouse, Waterhead Mills, Lowell, Mass.
Nichols, Nathan A.	VI b	Draftsman, The Lamson Co., Lowell, Mass.
Parkin, Prescott R.	Vb	Stock Clerk, General Electric Co., East Boston, Mass.
Pedler, William A.	IVa	See Evening, 1906.
Perron, Francis J.	Vb	With Brightwood Mfg. Co., No. Andover, Mass.
Perry, Clarence R.	I Ib	Assistant Superintendent, Worsted Dept., Washington Mills, Lawrence, Mass.
Racicot, Marie E.	III b	Designer, Pentucket Narrow Fabric Co., Lowell, Mass.
Robinson, James E.	VII	Finisher, Adams Mfg. Co., Shelton, Conn.
Robinson, Ruddach P.	VII	Paymaster, Beaver Brook Mills, Collinsville, Mass.
Rogers, John F.	Ia	Lowell, Mass.
Rowlands, Harold	Va	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Shaffer, William A.	VI d	Machinist, W. W. Carey, Lowell, Mass.
Shields, John J.	Va	Fireman, State Normal School, Lowell, Mass.
Stanley, John R.	I Ib	Section Hand, Starr Worsted Co., Fitchburg, Mass.



Name	Course	Occupation
Stearns, Orlo F.	IVa	With Bureau of Standards, U. S. Department of Commerce, Pittsburg, Pa.
Stewart, George	Ia-IVa	Overseer of Dyeing, Massachusetts Cotton Mills, Lowell, Mass.
Tennant, Joseph A.	VIb	Machinist, Lawrence Duck Co., Lawrence, Mass.
Wade, Frank J.	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Walton, Frank L.	Ia	Manager, Tupelo Cotton Mills, Tupelo, Miss.
Ward, Bernard D.	IIIa	Pattern Weaver, U. S. Bunting Co., Lowell, Mass.
Williams, Allen R.	Va	See Evening, 1910.
Willmott, Herbert J.	VIa	With Lamson Co., Lowell, Mass.
Wollin, Frederick W.	Va	Utica, N. Y.
Wright, Frederick J.	Vb	With Massachusetts Mohair Plush Co., Lowell, Mass.

### Day Course, 1912

	Diploma	Graduates
Bigelow, Prescott F.	II	With Cheney Bros., So. Manchester, Conn.
Brown, Rollins G.	IV	Overseer, White Mills of New Hampshire, West Peterboro, N. H.
Coan, Charles B.	IV	Dye Tester and Chemist, Federal Dye Company, Kingsport, Tenn.
Conant, Richard G.	I	Salesman, Brighton Mills, Passaic, N. J.
Dalton, Gregory S.	IV	Chemist, Mansfield Tire and Rubber Company, Mansfield, Ohio.
Dearth, Elmer E.	IV	Head of Fabric and Specifications Department, Federal Rubber Co., Cudahy, Wis.
Elliot, Gordon B.	II	With Cheney Bros., So. Manchester, Conn.
Engstrom, Karl E.	VI	
Frost, Harold B.	II	Salesman and Assistant Styler, American Woolen Company, New York City.
Hassett, Paul J.	IV	Chemist, Remington Typewriter Co., Bridgeport, Conn.
Holmes, Otis M.	VI	See Day, 1913.
Hood, Leslie N.	IV	Chemist, Aberfoyle Manufacturing Company, Chester, Pa.
Lamont, Robert L.	II	With Cheney Bros., So. Manchester, Conn.
Leitch, Harold W.	IV	See Day, 1914.
Munroe, Sydney P.	I	Assistant Superintendent, Merchants Mfg. Co., Fall River, Mass.
Niven, Robert S.	VI	Draftsman, General Electric Company, Lynn, Mass.
Pottinger, James G.	II	New England Agent, S. Slater and Sons, Inc., Boston, Mass.
Roche, Raymond V.	IV	Overseer, Bleaching and Mercerizing, Renfrew Mfg. Co., Adams, Mass.
Rundlett, Arnold D.	VI	Assistant in Department Manager's Office, American Woolen Company, New York City.
Shea, Francis J.	II	With Cheney Bros., South Manchester, Conn.
Sullivan, John D.	VI	With Haverhill Box Board Co., Bradford, Mass.



Name	Course	Occupation
Thaxter, Joseph B., Jr.	II	Salesman, Smith and Dove Mfg. Co., Andover, Mass.
Whitehill, Warren H.	IV	Chemist, M. T. Stevens & Sons Co., Franklin Mills, Franklin, N. H.
Yavner, Harry	II	With East Weymouth Wool Scouring Company, East Weymouth, Mass.

### Evening Course, 1912

#### Certificate Holders

Beech, Wilfred	Ia	With Grant Yarn Co., Fitchburg, Mass.
Bernard, Joseph E.	VId	Machinist, Upton & Gilman, Lowell, Mass.
Blais, Emile	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Blanchette, Eugene	IIIb	With T. Martin & Bro. Mfg. Co., Lowell, Mass.
Boije, Walter F.	IIb-VII	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Brainerd, Albert C.	Ia	Second Hand, Everett Mills, Lawrence, Mass.
Brainerd, Harry C.	Ia	Second Hand, Lower Pacific Mills, Lawrence, Mass.
Bramley, Charles	Va	
Broderick, Thomas H.	VII	In charge of fulling, Stevens Mills, North Andover, Mass.
Browne, Charles D.	Ia	With Sherman Mfg. Co., Sherman, Texas.
Burke, George J.	VII	With Merrimack Woolen Co., Dracut, Mass.
Buzzell, Fred S.	IIIa	Second Hand, Arlington Mills, Lawrence, Mass.
Carlson, Goddard O.	VII	Overseer, Stirling Mills, Lowell, Mass.
Christenson, John O.	VIb	
Clark, John W.	IVa	Dyer, Whitestone Worsted Co., Danielson, Conn.
Daskalakis, Efthimios Z.	Vb	With Boott Mills, Lowell, Mass.
Dick, Henry K.	Ia	Instructor, Textile Dept., A. & M. College, West Raleigh, N. C.
Dittman, Ralph A.	IIIa	Assistant Superintendent, The Glazier Mfg. Co., So. Glastonbury, Conn.
Dollbaum, John A.	IIIa	
Donahey, William H.	Vb	Section Hand, Pentucket Narrow Fabric Co., Lowell, Mass.
Dulligan, Charles E.	IVa	See Evening, 1909.
Egan, Charles H.	IVa	Chemist, A. D. Little, Inc., Boston, Mass.
Freeman, Ralph W.	IVa	Second Hand Dyer, Waucantuck Mills, Uxbridge, Mass.
Frothingham, Newton S.	Ia	Of Langdon & Frothingham, Boston, Mass.
Graves, John F.	VIb	Draftsman, Smith and Brooks, Lowell, Mass.
Greenwood, Ralph F.	VII	Manager, Stafford Mills, Central Falls, R. I.
Hansen, Hans M.	VId	Foreman, U. S. Cartridge Co., Lowell, Mass.
Hartshorn, George T.	VII	Department Head, American Felt Co., Port Chester, N. Y.

Name	Course	Occupation
Hibbert, George E.	Vb	See Evening, 1910.
Higginson, Joseph H.	IIIa	Assistant Superintendent, Pentucket Mills, Haverhill, Mass.
Holland, Walter F.	IIIa	Loomfixer, Washington Mills, Lawrence, Mass.
Hutchings, James C.	VII	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Jackson, Frank	VId	See Evening, 1910.
Jasper, Grant	Vc	Farmer, Pelham, N. H.
Kent, Arthur	VIb	Died August, 1914.
Kerrigan, Arthur J.	VIa	Electrical Engineer, General Electric Co., Schenectady, N. Y.
Lambert, Harry	IIb	Section Hand, Pacific Mills, Lawrence, Mass.
Lapierre, Alderic S.	IIIa	Second Hand, Tremont and Suffolk Mills, Lawrence Section, Lowell, Mass.
LaPorte, Philip J.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.
Leith, Joseph E.	Vb	Second Hand, Jackson Mills, Nashua, N. H.
Lockberg, John L.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Lowe, John C.	IIb	Instructor, Woolen Yarns, Lowell Textile School, Lowell, Mass.
McCann, Martin	Vb	
Macdonald, Chester W.	VIa	Department Head, Practical Electricity, Lowell Vocational School, Lowell, Mass.
Michael, Joseph C.	Vb	With George F. White, Lowell, Mass.
Muldoon, Joseph M.	VIb	
Naylor, Charles	IVa	Died January, 1914.
Orrell, Frank L.	IIb	See Evening, 1909.
Palm, Carl H.	VIa	Tool-Maker, Metz Automobile Co., Waltham, Mass.
Pihl, Ingrid I.	IIb	Stenographer, Victor Pihl, Lowell, Mass.
Preble, George A.	Va	See Evening, 1908.
Prescott, William B.	Va	Cotton Broker, A. H. Chase & Co., Boston, Mass.
Redman, H. Stewart	VIa	See Evening, 1904.
Riley, Edward T.	IIIa	No. Billerica, Mass.
Rollins, Henry E.	VII	Overseer of Dyeing, American Woolen Co., Moosup, Conn.
Royds, James	Ia	Overseer, Boott Mills, Lowell, Mass.
Savage, Charles F.	IVa	Clerk, Lamson Co., Lowell, Mass.
Shearer, David D.	VII	Second Hand, Finishing, Rhode Island Worsted Co., Stafford Springs, Conn.
Skidmore, Russell P.	VIb	Springfield, Mass.
Smith, William F.	VId	Lowell, Mass.
Stevens, Harold S.	IIIa	Director of Manual Training, Gardner, Mass.
Stevenson, Robert P.	Ia	Salesman, Wm. V. Threlfall, Boston, Mass.
Sugden, Albert G.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Swanson, Victor E.	IVa	Carbonizer, Stirling Mills, Lowell, Mass.
Taylor, Harold S.	VIb	Clerk, Wing's Market, Lowell, Mass.
Towers, Frederic G.	Ia	Section Hand, Pacific Mills, Lawrence, Mass.

Name	Course	Occupation
Turgeon, Roderick	IVa	Clerk, Talbot Dyewood and Chemical Co., Lowell, Mass.
Vause, John	Va	With Pacific Mills, Lawrence, Mass.
Ward, Herbert H.	Vb	Gilbertville, Mass.
Webster, Orrin H.	Ia	Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.
Wicks, Frederic M.	IIIa	Second Hand, Pentucket Mills, Haverhill, Mass.
Wilkinson, Joseph	IIIa	Loomfixer, U. S. Bunting Co., Lowell, Mass.
Wood, Arthur S.	Va	Second Hand, Granby Elastic Web Co., Granby, P. Q.

### Day Course, 1913

#### Degree Graduates

Holmes, Otis M.	VI	Draftsman, United Shoe Machinery Company, Beverly, Mass.
Pensel, George R.	IV	Chemist, Shuttleworth Brothers Company, Amsterdam, N. Y.

#### Diploma Graduates

Bennett, Herbert B.	II	Salesman, J. H. Lane Co., New York City.
Cleary, Charles J.	II	Laboratory Assistant in Textiles, Bureau of Standards, Washington, D. C.
Cook, Kenneth B.	I	Textile Expert, U. S. Rubber Co., Newark, N. J.
Davieau, Arthur N.	VI	With Cheney Brothers, So. Manchester, Conn.
Davis, Alexander D.	VI	See Day, 1914.
Dearborn, Roy	VI	With Cheney Brothers, So. Manchester, Conn.
Gadsby, Arthur N.	II	Assistant Physicist, Bureau of Standards, Washington, D. C.
Horton, Chester T.	VI	See Day, 1914.
Johnson, Arthur K.	IV	Student, Massachusetts Institute of Technology, Boston, Mass.
Mather, Harold T.	VI	Safety Inspector, Aetna Life Insurance Co., Hartford, Conn.
Murray, James	IV	Manager, Crescent Color and Chemical Works, Inc., Dunellen, N. J.
Peck, Carroll W.	IV	Salesman, Brewer and Co., Worcester, Mass.
Pillsbury, Ray C.	I	Investigator, Cheney Bros., South Manchester, Conn.
Plummer, Elliott B.	IV	Assistant Superintendent, Sayles Finishing Co., Plant C., Phillipsdale, R. I.
Putnam, Philip C.	IV	Assistant Division Superintendent, Glenlyon Dyeworks, Saylesville, R. I.
Richardson, Richardson P.	I	Assistant Superintendent, Nos. 2 and 3 Thread Mills, Clark Thread Co., East Newark, N. J.
Sylvain, Charles E.	VI	With Chelsea Fibre Co., Brooklyn, N. Y.
Walen, Ernest D.	VI	See Day, 1914.

## Evening Course, 1913

### Certificate Holders

Name	Course	Occupation
Abbott, Arthur G.	Vb	Died August 16, 1916.
Allen, William J.	IVa	Second Hand, Pacific Mills, Lawrence, Mass.
Anderton, Harry	Vb	See Evening, 1910.
Atkinson, Reginald C.	IVa	Laboratory Clerk, Silesia Worsted Mills, No. Chelmsford, Mass.
Bassett, Cyrus J.	Vb	Clerk, U. S. Cartridge Co., Lowell, Mass.
Beaulieu, William E.	IIb	Machinist, International Steel and Ordnance Corporation, Lowell, Mass.
Bell, Charles W.	VIa	Electrician, Gorham Mfg. Co., Providence, R. I.
Black, Alexander S.	Vb	Bookkeeper, Pacific Mills, Lawrence, Mass.
Breen, James D.	Vc	Second Hand, Appleton Co., Lowell, Mass.
Breen, John P.	Vb	With Bay State Mills, Lowell, Mass.
Butland, Ralph A.	VII	With Washington Mills, Lawrence, Mass.
Buzzell, Fred S.	VII	See Evening, 1912.
Charleton, Peter	VIa	Lowell, Mass.
Clarke, Wesley J.	VIId	With Tyer Rubber Co., Andover, Mass.
Classon, Walter H.	Vc	Second Hand, Nashua Mfg. Co., Nashua, N. H.
Cote, Fred J.	VIa	With General Electric Co., Lynn, Mass.
Cox, Edward J.	Ia	See Evening, 1910.
Cudmore, Edward T.	VIId	Machinist, Merrimack Mfg. Co., Lowell, Mass.
Cushing, Lester H.	Ia	Instructor in Languages, Lowell Textile School, Lowell, Mass.
Daskalakis, Efthimios Z.	Vc	See Evening, 1912.
Devine, Mary F.	IVa	Teacher, Public Schools, Lowell, Mass.
Doyle, John B.	VIId	With M. Doyle & Son, Lowell, Mass.
Dunn, George C.	IVb	See Evening, 1908.
Ekengren, Hilding C.	IIIB	Clerk, Dickerman and McQuade, Lowell, Mass.
Forrest, William R.	VIId	Machinist, United Shoe Machinery Co., Beverly, Mass.
Freeman, George D.	VIId	With U. S. Cartridge Co., Lowell, Mass.
Giffin, Charles H.	IIIIa	Overseer, P. J. Amidon and Son, Wilton, N. H.
Giffin, George R.	IIIIa	Overseer, Somerset Mfg. Co., Raritan, N. J.
Gile, Harold E.	IVa	Laboratory Assistant, Arlington Mills, Lawrence, Mass.
Gordon, Loyd H.	VIa	Pattern Maker, Saco-Lowell Shops, Lowell, Mass.
Hannagan, Edward F.	IIb	Section Hand, Washington Mills, Lawrence, Mass.
Hanson, Edward	Ia	See Evening, 1908.
Herron, Alexander T.	Ia	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Higgins, Alfred	IIIIa	Designer and Second Hand, Wauregan Co., Wauregan, Conn.
Hoelzel, Louis C.	VIa	With Washington Mills, Lawrence, Mass.
Howker, John	Ia	Foreman, Boott Mills, Lowell, Mass.



Name	Course	Occupation
Innes, Andrew K.	Vb	Clerk, Arlington Mills, Lawrence, Mass.
Jackson, Walter J.	IIa	Assistant Superintendent, Sutton's Mills, No. Andover, Mass.
Jarvis, Charles	Vb	
Jones, Herbert	Ia	Superintendent, Goodyear Cotton Mills, Inc., Killingly, Conn.
Kershaw, Samuel S.	Vb	See Evening, 1910.
Kirkpatrick, Lloyd A.	Ia	Representative, Wonalancet Co., Boston, Mass.
LaJeunesse, Joseph A.	IVc	See Evening, 1910.
Lambert, Seth	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Lang, William A.	Vc	With Lockwood, Greene and Co., Boston, Mass.
Learned, Frank E.	Va	Assistant Designer and Overseer, Merrimac Mills, Methuen, Mass.
Leaver, Raymond J.	VIb	Draftsman, Arlington Mills, Lawrence, Mass.
Leonard, Charles W.	VII	Second Hand, Dyehouse, Mayo Woolen Co., Millbury, Mass.
Lowe, Harry F.	Va	Loomfixer, Merrimack Mfg. Co., Lowell, Mass.
McDonald, William A.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
McGowan, Annie C.	IIIb	With Lowell Hosiery Co., Lowell, Mass.
McGurn, James P.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Maguire, Andrew F.	Vb	With Massachusetts Mohair Plush Co., Lowell, Mass.
Manning, James B.	IVb	See Evening, 1911.
Maynard, Wilfred B.	VII	Paymaster, Brookfield Woolen Co., Lowell, Mass.
Metcalf, Walter B.	IIb	Overseer, Silesia Worsted Mills, North Chelmsford, Mass.
Miller, Ernest P., Jr.	Ib	With Cheney Bros., So. Manchester, Conn.
Monahan, Patrick H.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Murphy, Leo T.	Vc	
Musard, Henry A.	Vc	Machinist, Remington Arms, Bridgeport, Conn.
Nelson, Ernest H.	Ib	See Evening, 1900.
Nicoll, John	IVb	See Evening, 1910.
Orrell, Ernest R.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Orrell, Frank L.	Vb	See Evening, 1909.
Preble, George A.	Vb-Vc	See Evening, 1908.
Quinn, James H.	VII	Cloth Inspector, Washington Mills, Lawrence, Mass.
Randall, William O.	IIb	Chief Clerk, Cost Accounting Department, Westinghouse Co., Chicopee Falls, Mass.
Redman, H. Stewart	Ib	See Evening, 1904.
Redpath, Robert H.	VII	With Brightwood Mfg. Co., No. Andover, Mass.
Reynolds, James J.	Vc	Boston, Mass.
Rollins, Sidney R.	IIb	Clerk, American Woolen Co., Boston, Mass.



Name	Course	Occupation
Shaw, William	VIa	Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Shearer, David D.	Vb	See Evening, 1912.
Sleeper, Robert R.	VII	See Day, 1900.
Soule, William N.	VI d	Machinist, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Sugden, Albert G.	VII	See Evening, 1912.
Sullivan, Michael F.	VIa	See Evening, 1910.
Wainwright, Harold	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Whitman, William P.	IVb	See Evening, 1910.
Wilkinson, Joseph	VII	See Evening, 1912.
Younger, Andrew	IIIa	Instructor, Weaving, Lowell Textile School, Lowell, Mass.

### Day Course, 1914

#### Degree Graduates

Davis, Alexander D.	VI	Instructor, Lowell Textile School, Lowell, Mass.
Horton, Chester T.	VI	Wilmington, Mass.
Leitch, Harold W.	IV	Chemist, Brightwood Manufacturing Co., North Andover, Mass.
Walen, Ernest D.	VI	Laboratory Assistant, Bureau of Standards, Washington, D. C.

#### Diploma Graduates

Blake, Parker G.	VI	Canadian Representative, Crimmins and Pierce, Boston, Mass.
Bradley, Raymond F.	VI	Garage Proprietor, Town Light Garage Co., East Gloucester, Mass.
Brickett, Raymond C.	II	Overseer, Columbia Rope Co., Auburn, N. Y.
Creese, Guy T.	IV	Chemist, Creese and Cook Co., Danvers, Mass.
Dorr, Clinton L.	VI	With Stark Mills, Manchester, N. H.
Fisher, Russell T.	VI	Salesman, Marshall Field & Co., New York City.
Lillis, Marvin H.	IV	With Brightwood Mfg. Co., No. Andover, Mass.
McGowan, Frank R.	VI	See Day, 1915.

### Evening Course, 1914

#### Certificate Holders

Alter, Frederick A.	IVa	Dyer, D. MacIntosh & Sons Co., Holyoke, Mass.
Bakewell, Albert	Vb	With Boott Mills, Lowell, Mass.
Barnes, Hammond	Ia - Va	With Massachusetts Cotton Mills, Lowell, Mass.
Bixby, Edward E.	IIIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Boyle, John E.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Brandy, William F.	IVa	Assistant Superintendent, Henry Klous, Inc., Lawrence, Mass.

Name	Course	Occupation
Brown, James H.	VIa	Electrical Operator, New England Power Transmission Co., Worcester, Mass.
Brown, Leon E.	VIa	Foreman Pattern Maker, Lamson Co., Lowell, Mass.
Burns, Richard L.	VIb	Pattern Making, Tremont and Suffolk Mills, Lowell, Mass.
Campling, Frank	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Clark, John H.	IVa	Lawrence, Mass.
Cochrane, William D.	IVa	Chemist, Merrimac Chemical Co., North Woburn, Mass.
Collins, Frank	VIa	Draftsman, C. G. Sargent's Sons Corp., Graniteville, Mass.
Cooper, George H.	Ia	With Vickery and Hill Publishing Co., Augusta, Me.
Cox, Edward J.	Ia	See Evening, 1910.
Delderfield, John W.	VIa	Storekeeper, Lamson Co., Lowell, Mass.
Donahue, William E.	VIb	Foreman, U. S. Cartridge Co., Lowell, Mass.
Dowd, Martin F.	IIIa	Pattern Weaver and Dresser, U. S. Worsted Co., Lawrence, Mass.
Emmons, Harry I.	IVa	Dyer, Washington Mills, Lawrence, Mass.
Freeman, Ralph W.	IVb	See Evening, 1912.
Gibbons, James J.	VIa	With D. H. Caswell, Optician, Lawrence, Mass.
Giffin, Charles H.	VII	See Evening, 1913.
Giffin, George R.	VII	See Evening, 1913.
Gill, Gardner G.	IVa	Travelling Salesman, W. A. Lippincott Co., Boston, Mass.
Gilman, Edward T.	VIa	Master Mechanic, Boott Mills, Lowell, Mass.
Haithwaite, Albert	Ia	Second Hand, Appleton Co., Lowell, Mass.
Haldane, Andrew	Va	Section Hand, Pacific Mills, Lawrence, Mass.
Hall, Sydney H.	VIb	Assistant Manager, John Dennis Machine Co., Lowell, Mass.
Hammond, John N.	Vb	Second Hand, Sutton's Mills, No. Andover, Mass.
Hannagan, Edward F.	VII	See Evening, 1913.
Hanson, Winfield S.	IVa	Clerk, Beacon Trust Co., Boston, Mass.
Hartwig, Albert E.	Vb	Student, Wentworth Institute, Boston, Mass.
Henzie, John J.	IIIa	
Herbst, Gustav F.	Va	New York City.
Herron, Alexander T.	IVa	See Evening, 1913.
Hill, Bruce	IIIa	Loomfixer, Arlington Mills, Lawrence, Mass.
Hill, Paul	VII	With Lawrence Dye Works, Lawrence, Mass.
Horman, Charles P.	IIIa	Loomfixer, No. Billerica Woolen Co., No. Billerica, Mass.
Howe, Charles W., Jr.	VIa	Efficiency Engineer, Saco-Lowell Shops, Lowell, Mass.
Howker, John	Va	See Evening, 1913.
Huse, Charles H.	VIb	Student, Lowell Textile School, Lowell, Mass.

Name	Course	Occupation
Jackson, Walter J.	Vb	See Evening, 1913.
Johnson, Arthur O.	IVa	With Washington Mills, Lawrence, Mass.
Kent, Arthur	VIId	Died August, 1914.
Kirkpatrick, Lloyd A.	Ia	See Evening, 1913.
LaPrise, Frank E.	IVa	Assistant Dyer, Pondicherry Woolen Mills, Bridgton, Me.
Laurin, Erick T. L.	VIb	Student, Lowell Textile School, Lowell, Mass.
Learned, Frank E.	Vc	See Evening, 1913.
Leaver, Harold E.	IIb	Colorist, Arlington Mills, Lawrence, Mass.
Leith, Joseph E.	IIIa	See Evening, 1912.
Lewis, Charles S.	VIa	Fireman, Silesia Worsted Mills, North Chelmsford, Mass.
Linehan, Thomas W.	VII	Second Hand, Finishing, Ayer Mills, Lawrence, Mass.
Looby, George A.	Vc	With Bigelow Hartford Carpet Co., Lowell, Mass.
Lowe, Harry F.	Vb	See Evening, 1913.
Luce, Harry A.	VII	In Sample Department, U. S. Worsted Co., Lawrence, Mass.
MacDonald, John F.	Va	Clerk, Boott Mills, Boston, Mass.
McElroy, Claude R.	VIId	Machinist, Auto Tire Vulcanizing Co., Lowell, Mass.
Mack, Clarence P.	IIIa	Pattern Weaver, U. S. Worsted Co., Lawrence, Mass.
Macnee, Forrest F.	IIb	With George E. Kunhardt, New York City.
Mahoney, Joseph	Vc	Loomfixer, Bigelow-Hartford Carpet Co., Lowell, Mass.
Mears, Lewis N.	IVa	In Dyehouse, Boston Rubber Shoe Co., Malden, Mass.
Milot, Aram A.	Vb	
Mullen, Frank J.	VIId	Steamfitter, Carroll Bros., Lowell, Mass.
Nichol, Samuel J.	IVb	See Evening, 1911.
Nichols, Fernald H.	VIb	Draftsman, John A. Stevens, Lowell, Mass.
O'Brien, Frederick A.	VIb	Toolmaker, Saco-Lowell Shops, Lowell, Mass.
Parker, John G.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Pickles, Wilfrid	Va	With Pacific Mills, Lawrence, Mass.
Pierce, Duncan H.	VII	Manager, Foster Grain Co., Lowell, Mass.
Pierce, Gordon J.	Vb	With Riverside Mills, Olneyville, R. I.
Pihl, Mansfred M.	VIb	Draftsman, U. S. Cartridge Co., Lowell, Mass.
Pinkham, Banford O.	VIId	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Playdon, Louis C.	Ia	Instructor, Cotton Department, Lowell, Textile School, Lowell, Mass.
Redpath, Robert H.	Vb	See Evening, 1913.
Roesler, Alfred	IIIa	Died July 8, 1916.
Rouine, Francis E.	VIb	Assistant Foreman, U. S. Cartridge Co., Lowell, Mass.
Schmidt, Hartman F.	IIb - VII	Overseer, Albany Felt Co., Albany, N. Y.
Smith, Leonard	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Steere, Samuel A.	Va	Superintendent of Cotton Mill, Trainer Spinning Co., Chester, Pa.

Name	Course	Occupation
Stewart, George	Va	See Evening, 1911.
Stokham, Ernest F.	IVa	Assistant Chemist, Talbot Dyewood and Chemical Co., North Billerica, Mass.
Torpey, Henry K. W.	VIb	Clerk in Dyehouse, Massachusetts Cotton Mills, Lowell, Mass.
Turner, Roscoe C.	IIb	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Twomey, Hugh	VIId	Blacksmith, Lowell, Mass.
Woodbury, Eugene P.	VII	With George E. Kunhardt, Lawrence, Mass.
Younger, Andrew	VII	See Evening, 1913.

### Day Course, 1915

#### Degree Graduates

Cosendai, Edwin F. E.	IV	Chemical Foreman, Butterworth-Judson Corporation, Newark, N. J.
Lane, Oliver F.	IV	Superintendent and Chemist, Crescent Color and Chemical Works, Inc., Dunellen, N. J.
McGowan, Frank R.	VI	With U. S. Cartridge Co., Lowell, Mass.
Neyman, Julius E.	IV	Chemist, U. S. Worsted Co., No. Chelmsford, Mass.
Rich, Edward	IV	With Klipstein and Co., Chrome, N. J.
Sawyer, Joseph W.	IV	Instructor, Lowell Textile School, Lowell, Mass.

#### Diploma Graduates

Harrington, Thomas	IV	Cambridge, Mass.
O'Brien, Philip F.	II	Yarn Tester, U. S. Worsted Co., Lawrence, Mass.

### Evening Course, 1915

#### Certificate Holders

Armitage, Ernest	Vb	Loomfixer, Ayer Mills, Lawrence, Mass.
Atkinson, Henry	IIIa	Assistant Designer, Arlington Mills, Lawrence, Mass.
Ballinger, Raymond F.	VIb	Second Hand, U. S. Worsted Co., North Chelmsford, Mass.
Barrows, Ariston K.	Va	Cost Clerk, Bay State Cotton Corporation, Lowell, Mass.
Birdsall, James E.	IIb	Loomfixer, Washington Mills, Lawrence, Mass.
Bonney, Nathaniel H.	IVa	Draftsman, Pacific Mills, Lawrence, Mass.
Bordeleau, Georges A.	IIb	Assistant Pharmacist, Dows Drug Store, Lowell, Mass.
Branch, Guy E.	IIb	With Lower Pacific Mills, Lawrence, Mass.
Brandy, William F.	IIa	See Evening, 1914.
Butland, Ralph A.	IIb	See Evening, 1913.
Caldwell, James	VIId	Machinist, M. T. Stevens Co., Andover, Mass.
Campbell, Charles F. P.	IIIb	Student, Lowell High School, Lowell, Mass.



Name	Course	Occupation
Casavant, Elphege H.	VI d	Machinist, U. S. Navy Yard, Boston, Mass.
Chadwick, Laurie	V b	With American Woolen Co., Lawrence, Mass.
Cochrane, John	IV a	See Evening, 1911.
Cox, Edward J.	V c	See Evening, 1910.
Dubois, Ubald E.	VI b	Office Clerk, Saco-Lowell Shops, Lowell, Mass.
Early, William E.	VI b	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Egan, John W.	VI b-VI d	Toolmaker, Saco-Lowell Shops, Lowell, Mass.
Eichhorn, Paul A.	VI a	With Washington Mills, Lawrence, Mass.
Faneuf, George J.	VI b	Pattern Maker, The Lamson Co., Lowell, Mass.
Fernley, Bert D.	VI b-VI d	Machinist, U.S. Cartridge Co., Lowell, Mass.
Flemings, Lester A.	I a	See Evening, 1910.
Ford, Joseph L.	III a	Section Hand, Pacific Mills, Lawrence, Mass.
French, George W., Jr.	III a	Consulting Engineer, Danvers, Mass.
Fuller, Edwin M.	I a	Assistant Manager, Waterhead Mills, Inc., Lowell, Mass.
Gagnon, Arthur C.	VI d	With. L. H. Spaulding and Co., Lowell, Mass.
Garrity, Peter F.	V a	With Merrimack Mfg. Co., Lowell, Mass.
Geaney, James H.	VII	Overseer, Brightwood Mfg. Co., North Andover, Mass.
Gearin, John W.	VI b	Machinist, U. S. Cartridge Co., Lowell, Mass.
Gerry, Churchill	VI a	Telephone Assembler, Western Electric Co., Boston, Mass.
Goddard, Harold W.	VI b	Died August 31, 1915.
Goddard, Walter L.	VII	Clerk in Superintendent's Office, Walworth Bros., Lawrence, Mass.
Gustafson, Alfred L.	VI a	See Evening, 1911.
Hale, Frank O.	I a	Trinidad, Cuba.
Hall, Richard G.	I a	Machinist, Lawrence Mfg. Co., Lowell, Mass.
Halloran, Joseph M.	IV a	Chauffeur, A. G. Pollard, Lowell, Mass.
Hanley, Edward T.	II b	Clerk, Abbot Worsted Co., Forge Village, Mass.
Hashmatian, Harry	III b	Lowell, Mass.
Healy, Andrew J.	VI d	Machinist, Pettingill Machine Co., Amesbury, Mass.
Henderson, George R.	IV a	Second Hand, Dyehouse, Oneida Bleachery, Inc., New York Mills, New York.
Higginbottom, Harold J.	IV a	In Dyehouse, Lower Pacific Mills, Lawrence, Mass.
Jackson, Charles F.	VI b	Draftsman, Davis and Furber Machine Co., Andover, Mass.
Jackson, Walter J.	III a-VII	See Evening, 1913.
Kannheiser, William A.	V b	With Wood Worsted Mills, Lawrence, Mass.
Keleher, John L.	VI d	Lowell, Mass.
Kelly, Thomas F.	IV a	Assistant Chemist, Merrimack Mfg. Co., Lowell, Mass.
Kenyon, Herbert	I a	Die Grinder, U. S. Cartridge Co., Lowell, Mass.



Name	Course	Occupation
Kyle, George S.	Ia	With Muscogee Mfg. Co., Columbus, Ga.
Lambert, Harry	Vb	See Evening, 1912.
Lane, Michael J.	VII	With Arlington Mills, Lawrence, Mass.
Langevin, George F.	VIb	Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Leather, Seward S.	IIb	Student, Harvard Dental School, Boston, Mass.
Lees, William H.	IIIa	With Lowell Narrow Fabric Co., Lowell, Mass.
Leland, Raymond C.	VIb	Student, Worcester Polytechnic Institute, Worcester, Mass.
Leonard, Charles W.	IVb	See Evening, 1913.
Lightbown, William H.	Vb	Fixer, Silesia Worsted Mills, No. Chelmsford, Mass.
Lister, Henry	VII	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
Logan, Robert F.	Va	Second Hand, Pemberton Mills, Lawrence, Mass.
Luce, Harry A.	IIIa	See Evening, 1914.
McCartin, Marietta L.	IIIa	Clerk, U. S. Bunting Co., Lowell, Mass.
McGaunn, Charles	VIa	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGaunn, Theodore	VIa	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGee, David	IVa	Amsterdam, N. Y.
McGrath, William F.	VII	With Wood Worsted Mills, Lawrence, Mass.
Maguire, James H.	IIb	See Evening, 1905.
Marsden, Fred	IIIa	Assistant Overseer, U. S. Worsted Co., Lawrence, Mass.
Merrill, Lester C.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
Moss, Joseph	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Mountain, Everett R.	Ia	Second Hand, Bay State Cotton Corp., Lowell, Mass.
Neel, Andrew, Jr.,	IVa	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Nicoll, James K.	VIa	Machinist, Wood Worsted Mills, Lawrence, Mass.
O'Brien, Raymond L.	IVa	Color Chemist, Harry Haigh, Dyestuffs and Chemicals, Boston, Mass.
Obst, Ehrich	VIa	Machinist, Everett Mills, Lawrence, Mass.
O'Connor, Frank H.	Ia	Second Hand, Appleton Co., Lowell, Mass.
Pendlebury, David	Ia	Section Hand, Pacific Mills, Lawrence, Mass.
Pendlebury, Harold	VIa	Machinist, Pacific Mill Print Works, Lawrence, Mass.
Pike, Daniel P.	IVa	Farmer, Pike and Pike, Wamesit, Mass.
Poore, Herbert E.	IVa	Color Mixer, Washington Mills, Lawrence, Mass.
Porter, William E.	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Preble, George A.	IVa	See Evening, 1908.
Regan, Joseph L.	VIb	Meter Repairing, Lowell Gas Light Co., Lowell, Mass.
Richards, Raymond A.	IIIb	Box Maker, Lawrence Mfg. Co., Lowell, Mass.

Name	Course	Occupation
Roberts, Joseph	Vb	With U. S. Worsted Co., Lawrence, Mass.
Rodger, Thomas C.	IVa	Storehouse Clerk, B. and M. Railroad, No. Billerica, Mass.
Sanborn, Harold S.	VII	Examiner, Brightwood Mfg. Co., North Andover, Mass.
Schmidt, Hartman F.	IIa	See Evening, 1914.
Scully, Patrick F.	IIIa-VII	With the U. S. Worsted Co., Lowell, Mass.
Shearer, William A.	Vb	With U. S. Worsted Co., Lawrence, Mass.
Shedd, Howard P.	IVb	West Medford, Mass.
Simmers, Arthur A.	Vib	Millwright, Wood Worsted Mills, Lawrence, Mass.
Smart, George A.	Va	Assembler, International Steel and Ordnance Corporation, Lowell, Mass.
Smith, Gordon N.	IVa	Clerk, Mrs. George Irving, Lawrence, Mass.
Smith, Mae V.	IIIb	Clerk, Albert B. Cameron, Lowell, Mass.
Smith, Miles H.	IIb	With Washington Mills, Lawrence, Mass.
Snickers, Eugene	Ia	East Chicago, Ill.
Stafford, James	Va	Loomfixer, Pacific Mills, Lawrence, Mass.
Stahl, Milton C.	IIb	With Lower Pacific Mills, Lawrence, Mass.
Stewart, Warren D.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.
Stiehler, Arthur F.	Vb	With American Woolen Co., Lawrence, Mass.
Swift, John W.	IIb	Overseer, Hudson Worsted Co., Hudson, Mass.
Thompson, George	Vb	Loomfixer, Ayer Mills, Lawrence, Mass.
Torpey, Henry K. W.	IVa	See Evening, 1914.
Walker, John J.	Vib	Draftsman, Pacific Mills, Lawrence, Mass.
Walworth, Walter F.	Vib	Student, Massachusetts Institute of Technology, Boston, Mass.
Waters, Thomas W., Jr.	Va	With Farwell Bleachery, Lawrence, Mass.
Weinhold, William F.	IIIa	With U. S. Worsted Co., Lawrence, Mass.
Whitley, Arthur M.	IIa-IIb	Superintendent, Brookside Worsted Mills, West Chelmsford, Mass.
Wilde, Herman E.	IVa	Color Mixer, Washington Mills, Lawrence, Mass.
Winslow, Warren A.	IIb	Clerk, Abbot Worsted Co., Forge Village, Mass.
Wood, Samuel J.	Ia	Fixer, Boott Mills, Lowell, Mass.
Zimmer, George D.	IVa	Clerk, H. C. Page, Lowell, Mass.

## Day Course, 1916

### Degree Graduates

Name	Course	Occupation
Adams, Floyd W.	VI	Experimental Engineer, The Barrett Co., New York City.
Echmalian, John G.	VI	Lowell, Mass.
Farnsworth, Harold V.	VI	With Lancaster Mills, Clinton, Mass.
Forsaith, Ralph A.	VI	With Appleton Company, Lowell, Mass.
Lamprey, Leslie B.	IV	Chemist, S. Slater and Son's Co., Webster, Mass.
Putnam, George I.	IV	Chemist, and Dyestuff and Chemical Purchasing Agent, Mohawk Valley Cap and Knitting Company, Utica, N. Y.
Richardson, George O.	IV	With Roessler and Hasslacher Chemical Company, Perth Amboy, N. J.
Sanborn, Ralph L.	VI	With American Net and Twine Company, East Cambridge, Mass.

### Diploma Graduates

Baker, William J.	IV	Chemist, Dupont Explosive Plant, Hopewell, Va.
Colby, James T.	VI	With Amoskeag Manufacturing Company, Manchester, N. H.
Cummings, Edward S.	VI	With Massachusetts Cotton Mills, Lowell, Mass.
Davieau, Alfred E.	VI	Observer, Cheney Brothers, South Manchester, Conn.
Gerrish, Henry K.	III	Systematizer, Cheney Brothers, South Manchester, Conn.
Molloy, Francis H.	II	Assistant Designer, Assabet Mills, Maynard, Mass.
Morrill, Howard A.	VI	Assistant Superintendent, Whittier Mills Company, Chattahoochee, Ga.
Peabody, Roger M.	II	With S. Slater and Son's Company, Webster, Mass.
Shaber, Hyman J.	VI	Student, Lowell Textile School, Lowell, Mass.
Tyler, Lauriston W.	II	With Oakland Mills, Oakland, Me.

## Evening Course, 1916

### Certificate Holders

Barnes, Hammond	IIIa	See Evening, 1914.
Baxter, Walter	Vb	With Brightwood Mills, North Andover, Mass.
Bean, Winthrop S.	IVa	Clerk, W. N. Sherwell, Lowell, Mass.
Benson, George E.	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Billings, Rupert F.	IVa	Student, Lowell Textile School, Lowell, Mass.
Birdsall, James E.	Vb	See Evening, 1915.
Bordeleau, Georges A.	IVa	See Evening, 1915.
Bowles, Willis H.	Va	Loomfixer, Boott Mills, Lowell, Mass.

Name	Course	Occupation
Branch, Guy E.	Vb	See Evening, 1915
Brown, James H.	VId	See Evening, 1914.
Bryden, Frederick A., Jr.	IVa	With Pacific Print Works, Lawrence, Mass.
Burke, John J.	IVa	Leather Dyer, American Hide and Leather Company, Lowell, Mass.
Burns, Robert H.	Ia	Bookkeeper, Armour and Company, Lowell, Mass.
Bzoski, John	Vb	With U. S. Worsted Company, Lowell, Mass.
Campbell, Thomas J.	IIIb	With T. J. Campbell, Lowell, Mass.
Charbonneau, Marie A.	IIIb	Milliner, Mrs. E. Riopelle, Lowell, Mass.
Cheetham, James A.	VIa	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Chicken, Harold M.	Ia	With Washington Mills, Lawrence, Mass.
Clough, Herschel G.	IVa	Third Hand, Massachusetts Cotton Mills, Lowell, Mass.
Coburn, Elmer R.	IVa	With Arlington Mills, Lawrence, Mass.
Conley, Leander F.	IVa	Second Hand Dyer, Lawrence Manufacturing Company, Lowell, Mass.
Coolens, Leon G.	Vb	With Merrimack Manufacturing Company, Lowell, Mass.
Crompton, George E.	IVa	Leather Worker, American Hide and Leather Company, Lowell, Mass.
Desaillier, Adolphe	VId	Machinist, International Steel and Ordnance Corporation, Lowell, Mass.
Flathers, George J.	IVa	Clerk, Merrimack Paper Company, Lawrence, Mass.
Fontaine, George E.	VId	Lowell, Mass.
French, Walter B.	VIa	Student, Lowell Textile School, Lowell, Mass.
Gallagher, Edward J.	Va	Clerk, Universal Winding Company, Boston, Mass.
Galle, Carl W.	VIb	Draftsman, Arlington Mills, Lawrence, Mass.
Gaudette, Eugene O.	VIa	Cost Clerk, The Lamson Company, Lowell, Mass.
Gaulin, Achille G.	VIb	Draftsman, U. S. Cartridge Company, Lowell, Mass.
Gerry, Churchill	IVa	See Evening, 1915.
Gesing, Roland M.	VII	With Brightwood Manufacturing Company, North Andover, Mass.
Gile, Harold E.	IVb	See Evening, 1913.
Gilley, Frederic S.	IIIa	Clerk, American Woolen Company, Boston, Mass.
Guenard, Julia A.	IIIb	With Lawrence Manufacturing Company, Lowell, Mass.
Gunning, Alfred J.	VII	With Brown and Adams, Boston, Mass.
Gunther, George A.	IVa	In Dyehouse, Merrimack Woolen Company, Dracut, Mass.
Haithwaite, George Q. R.	Va	Assistant Superintendent, Appleton Company, Lowell, Mass.
Hayward, Harry J.	Ia	Second Hand, Everett Mills, Lawrence, Mass.
Heeley, George E.	Va	Second Hand, Tremont and Suffolk Mills, Lowell, Mass.

Name	Course	Occupation
Hendricks, Thomas A.	Vib	Machinist, U. S. Cartridge Company, Lowell, Mass.
Higginbottom, Joseph J.	VId	With Boott Mills, Lowell, Mass.
Hodgkins, Richard D.	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Ingle, Ernest	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Jubenville, Joseph D.	VId	Machinist, C. S. Dodge, Lowell, Mass.
Keisling, William	Vb	Farmer, George E. Kunhardt Estate, North Andover, Mass.
Lane, Lewis D.	VId	Fixer, Arlington Mills, Lawrence, Mass.
LaPorte, Mary E.	IIIb	With U. S. Cartridge Company, Lowell, Mass.
Larue, Isabella G.	IIIb	With Lawrence Manufacturing Company, Lowell, Mass.
Lawrence, Abbott	VId	Machinist, Bay State Street Railway Company, Lowell, Mass.
Leaver, Harry	IVa	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Lowe, John C.	Vb	See Evening, 1912.
Lunan, Karl S.	VIa	Electrician, Massachusetts Cotton Mills, Lowell, Mass.
Lund, Stanley W.	Vib	With Farwell Bleachery, Lawrence, Mass.
Lynch, John	VId	Fixer, Arlington Mills, Lawrence, Mass.
McDermott, James	VII	Cloth Examiner, U. S. Worsted Company, Lawrence, Mass.
McKittrick, Percy A.	VIa	Officer Manager, Saco-Lowell Shops, Lowell, Mass.
Mosher, Chester L.	Vib	Draftsman, Boston and Maine Railroad, Car Shops, Billerica, Mass.
Murphy, John	Vib	Electrician, Appleton Company, Lowell, Mass.
Nelson, James A.	Va	See Evening, 1911.
Noring, Ernest G.	VII	With Washington Mills, Lawrence, Mass.
Peel, Tom	IVa	Laboratory Assistant, Brightwood Manufacturing Company, North Andover, Mass.
Pendlebury, David	Ia	See Evening, 1915.
Perron, Francis J.	IIIa	See Evening, 1911.
Playdon, Roy A.	Iib	With Beoli Mills, Fitchburg, Mass.
Quance, Alfred	IVa	Color Mixer, Washington Mills, Lawrence, Mass.
Rhodes, William H.	IIIa	With Pentucket Mills, Haverhill, Mass.
Rostron, Robert	Va	With Massachusetts Cotton Mills, Lowell, Mass.
Saunders, Louis P.	Vb	Second Hand, Sutton's Mills, North Andover, Mass.
Scully, Patrick F.	Vb	See Evening, 1915.
Shaw, Thomas A.	Vib	Third Hand, Lawrence Manufacturing Company, Lowell, Mass.
Smart, George A.	Vc	See Evening, 1915.
Smith, Edwin H.	IVa	Lawrence, Mass.
Smith, Miles H.	Vb	See Evening, 1915.
Snickers, Eugene	Ia	See Evening, 1915.
Sorenson, David P.	IIIa	Second Hand, Merrimack Woolen Mills, Dracut, Mass.



Name	Course	Occupation
Spillane, James F.	VIa	Machinist, U. S. Cartridge Company, Lowell, Mass.
Stewart, George	VIa	See Evening, 1911.
Sullivan, Joseph D.	IIIa	Assistant Designer, Talbot's Mills, North Billerica, Mass.
Taff, Joseph C.	VIa	Electrician, Lowell Bleachery, Lowell, Mass.
Takahashi, Gentaro	Ia	Student, Graduate School of Business Administration, Harvard University, Cambridge, Mass.
Taylor, Fred H.	Va	With J. W. Stewart and Company, Lowell, Mass.
Todd, Walter E.	VII	Student, Lowell Textile School, Lowell, Mass.
Tucker, Charles L.	Ia	Second Hand, Lawrence Manufacturing Company, Lowell, Mass.
Tucker, William W.	Ia	Foreman, Lawrence Manufacturing Company, Lowell, Mass.
Wainwright, Harold	IVb	See Evening, 1913.
Waring, Joseph	VIa	With Washington Mills, Lawrence, Mass.
West, Richard E.	IVa	With Stirling Mills, Lowell, Mass.
Wiesberg, Harry A.	VIb	Shipping Clerk, Arlington Mills, Lawrence, Mass.

## POSITIONS ATTAINED BY DAY GRADUATES

Directors of textile schools .....	1
Teachers .....	12
Mill vice-presidents .....	2
Mill treasurers and agents .....	12
Mill superintendents .....	23
Mill assistant superintendents .....	11
Mill foremen of departments .....	13
Assistants to superintendents .....	3
Mill auditors and accountants .....	3
Mill clerks .....	4
Second hands .....	5
Managers .....	27
Textile designers and fabric experts .....	18
Purchasing Agents .....	2
In commission houses .....	9
Salesmen .....	9
Chemists, dyers and chemical salesmen .....	55
In government employ .....	4
In state employ .....	1
Textile manufacturing, unassigned .....	21
Industrial engineering .....	17
Mill engineering .....	8
Civil engineering .....	1
Electricians .....	2
Paymasters .....	1
Trade journalists .....	4
In business, textile distributing or incidental thereto .....	5
Other business .....	17
Students .....	2
Married women .....	3
Employment not known .....	18
Not employed .....	3
Deceased .....	8
Total .....	324

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# LOWELL TEXTILE SCHOOL

## LOWELL, MASS.

Appendix to Bulletin No. 4, May, 1917  
(Reprint of the Address before the Textile Club,  
New York City, March 3, 1917)

## Textile Education and Preparedness

By LOUIS A. OLNEY, S. B., M. S.

Head of Department of Chemistry and Dyeing  
Lowell Textile School

No war, whether of an offensive or a defensive nature, can be carried to a successful conclusion simply through military force no matter how great or how well trained the armies may be. The intelligent co-operation of the steel, copper and chemical industries is absolutely essential even before the war can actually begin, and when it is once under way, the agricultural and textile resources of the country must be handled with expediency and economy. In fact, it is quite possible that in the ultimate developments, success or failure might rest upon the prudent and efficient handling of the two latter resources, for no matter how well equipped with steel and ammunition, armies cannot indefinitely respond to the gigantic tasks demanded, if the vitality of the individual members has been greatly reduced through starvation and exposure to the elements without sufficient clothing.

In time of war the managers of the textile industry must possess as great foresight and display as much power of execution as the officers in the field. Owing to the scarcity of labor and the insufficient and delayed supply of raw materials which always develops at such a time, their mental resources and ingenuity, as well as their ability to manage efficiently, will be taxed to the limit, and they *must not fail* to deliver the maximum output of their plants.

Providentially, the value of technical education, as specifically applied to the textile industry, was early recognized in America by those who were sufficiently progressive to undertake its introduction. As a result, there had developed in this country dur-

ing the past quarter of a century a system of textile education which, on the one hand, is sufficiently elemental in some of its phases to be of great value to the mill operative in increasing his competency and wage-earning capacity, and which, on the other hand, has progressed sufficiently to involve a system of higher technical education. It is now possible for a young man, after graduation from a high school of recognized standing, to pursue four-year technical courses giving a thorough foundation in science and engineering, but specializing in the requirements of the textile industry and leading to the Bachelor's degree in Textile Engineering and Textile Chemistry.

The activities of the textile industry naturally group themselves into four branches. The *first* is that of textile designing, which has to do with the origin of new styles and weaves, and which bears a similar relation to the textile industry that architecture does to the construction of buildings. The *second* deals with the actual processes of manufacturing the loose fiber into a woven fabric, and is entirely mechanical. The *third* is concerned with bleaching, scouring, dyeing, printing, and finishing, and the principles involved are almost entirely chemical, although executed partly through mechanical means. The *fourth* has to do with the selling and distribution of the manufactured goods. As elements of preparedness for war, the first and fourth need scarcely be considered, for practically all of the fabrics demanded for war purposes, such as uniform cloth, flannels, blankets, duck and canvas, are standard fabrics, the constructive specifications of which have been known for years by every interested manufacturer, and, on the other hand, the demand at such a time would be greater than the supply, and no special difficulties would be encountered in the distribution. It is the second and third departments which figure prominently as elements of preparedness, and fortunately textile education has developed most fully along corresponding lines. The man who has been thoroughly grounded in the mathematics and mechanism of textile machinery, and the chemistry and physics of his raw materials, and upon this foundation has built a practical experience in the handling of men and the observation of the details of efficient management, may prove to be as great an asset to his country as the man who takes his stand under the colors.



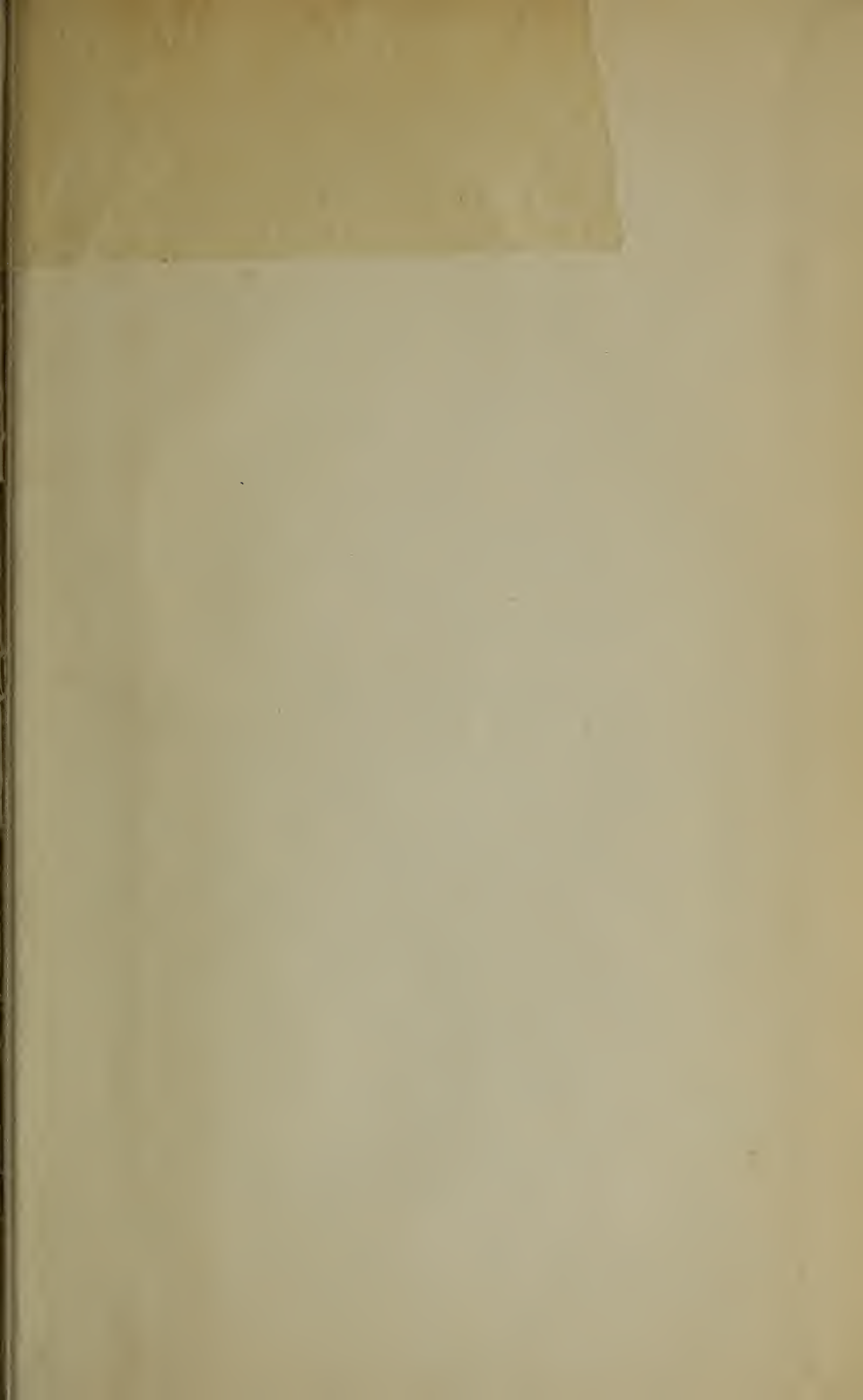
Another most valuable asset of preparedness which has developed through the third, or chemical department of textile education, should be noted. Within recent years there has been introduced into the curriculum the teaching of advanced organic chemistry, with extensive laboratory work in the preparation of dyes and their intermediate products from the crude materials of the distillation of coal tar. This work has for its object the training of men, some of whom have already taken a leading part in the manufacture of dyestuffs in this country, in order that they may become valuable assistants in the serious endeavor which is being made to build a color and chemical industry which shall be self-contained within our own borders, at least for the absolute requirements of the textile industry. There is, however, another and more important element of preparedness in the development of the color industry. It has already become a fact in history that the remarkable persistence with which the Germans have prosecuted the present war from the very start was largely due to her ability to convert, within a relatively few hours, the largest and most highly developed color industry in the world into a correspondingly well-developed explosive industry.

An entirely different, though perhaps equally important type of preparedness will be necessary later if our textile industry would successfully cope with the international competition which is bound to follow the present or any impending conflict. In this the first and fourth departments of the textile industry will be called upon to take their place with the second and third in order that we may win out in this gigantic commercial struggle which is sure to come in the not far distant future. An intelligent protective tariff will undoubtedly be as essential in this struggle as is a powerful navy in time of war, but in the long run the most effective and dependable protection will be that which, largely through technical education as applied to the textile industry, makes it possible for us to manufacture a little better quality of goods at a slightly lower cost than any other nation.

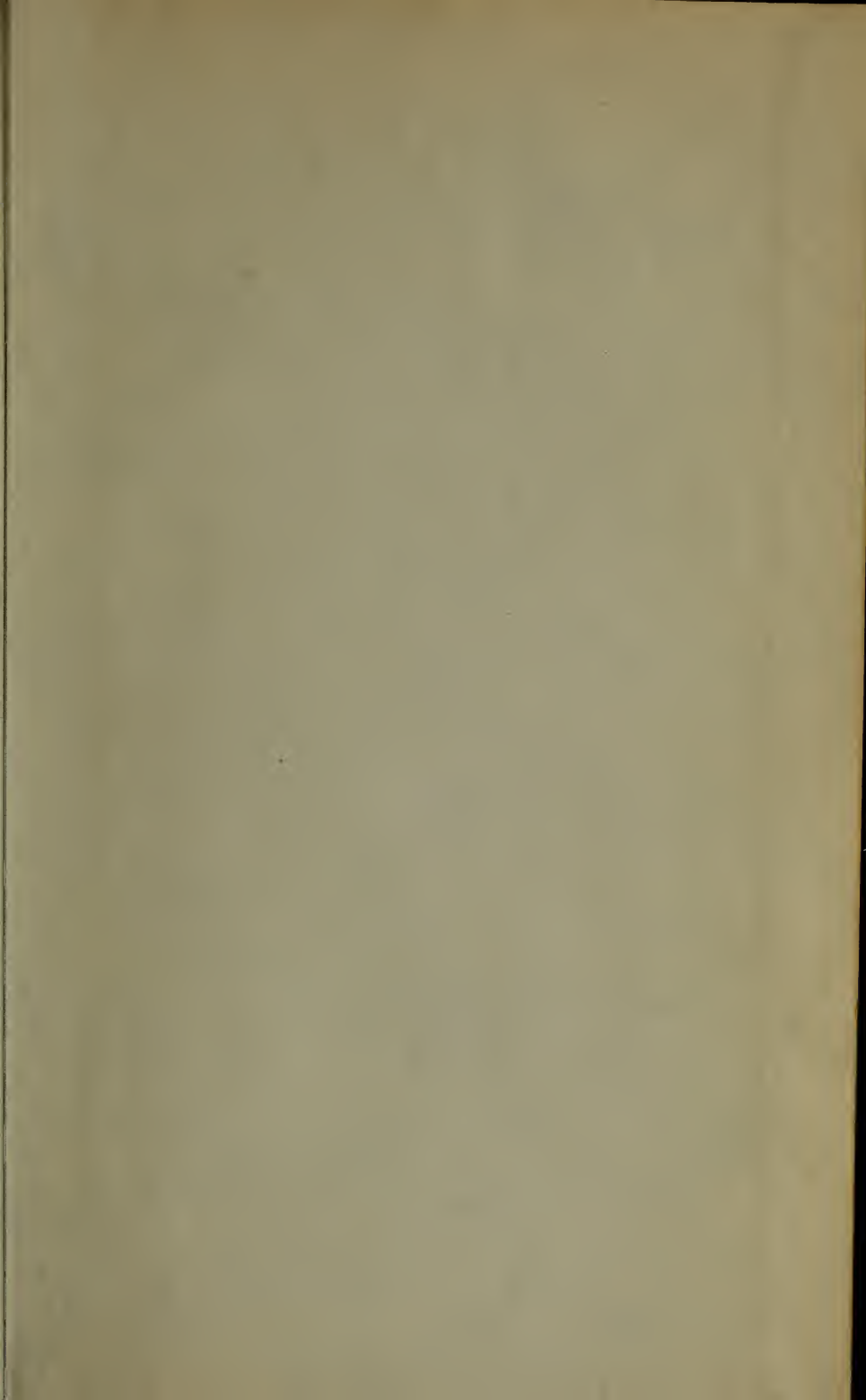
Thoughtful consideration of these few phases of the subject, it is believed, will lead without doubt to the establishment of the vital importance of Technical Education in the Textile Industry as a measure for preparedness both for war and for the more peaceful international competition.

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